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The Standard Operations Order Format:
Is Its Current Form and Content Sufficient for Command and Control?

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by

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Fort Leavenworth, Kansas

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information elements within the orders formats are used to infer information requirements. Thirdly, modern group dynamics theory for organizational performance is assessed and the corresponding information elements required to perform group tasks are determined. The study concludes with a comprehensive evaluation of the form and content of the operations order format together with a qualitative assessment of its sufficiency to command and control forces. Finally, the study proposes several modifications to the current operations order format that are intended to improve its utility.

The analysis indicates that the form of the current operations order format does not facilitate the understanding of the plan by its receivers. Additionally, the contents dictated by the current orders format neither reflects the realities of the postulated operational environment nor the emphasis on command in the command and control doctrine espoused in FM 100-5. The current orders format also superficially treats several critical functions required to accomplish group performance objectives and does not adequately separate information pertaining to the subordinate's problem space with his task environment.

The study brings to the surface several possibilities for improving the order. The development of a situation paragraph that combines the related elements of friendly, enemy, and terrain information to establish the problem or opportunity would greatly assist in defining the task environment. The sequencing of information beginning with the commander's intent, followed by the mission and then the situation would also improve the communication of the plan to subordinates. Additionally, the sequencing of guidance, by priority and purpose, which refers to the subordinate's problem space would also aid in the communication of the plan. Finally, the study recommends that the format include a separate paragraph which addresses possible contingencies in order to stimulate their formulation and dissemination.

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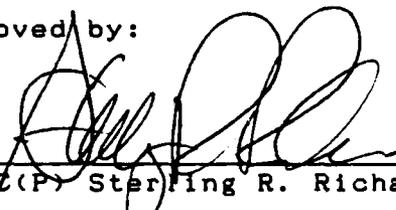
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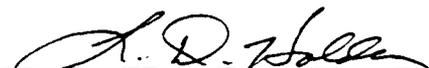
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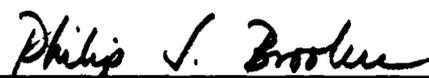
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ABSTRACT

THE STANDARD OPERATIONS ORDER FORMAT: Is Its Current Form and Content Sufficient for Command and Control? by Major Edward J. Filiberti, USA, 81 pages.

This study assesses the sufficiency of the current operations order format through an examination of its form and content. First, the study uses current communications and cognitive theory to evaluate the form of the operations order. These theories are used to relate the sequencing of information elements in the order with the receipt and understanding of the information by the receivers. Next, the study determines what information elements are required to be communicated in the orders format. The analysis considers three factors that influence the contents of the order. First, current command and control (C²) theory and doctrine are considered and their influence on the orders content determined. Secondly, an historical analysis of the evolution of the operation order format is conducted. The emerging elements within the various orders formats are then used to infer the information requirements of the current format. Thirdly, modern group dynamics theory for organizational performance is assessed and the corresponding information elements required to perform group tasks are determined. The study concludes with a comprehensive evaluation of the form and content of the operations order format together with a qualitative assessment of its sufficiency to command and control forces. Finally, the study proposes several modifications to the current operations order format that are intended to improve its utility.

The analysis indicates that the form of the current operations order format does not facilitate the understanding of the plan by its receivers. Additionally, the contents dictated by the current orders format neither reflects the realities of the postulated operational environment nor the emphasis on command in the command and control doctrine espoused in FM 100-5. The current orders format also superficially treats several critical functions required to accomplish group performance objectives and does not adequately separate information pertaining to the subordinate's problem space with his task environment.

The study brings to the surface several possibilities for improving the order. The development of a situation paragraph that combines the related elements of friendly, enemy, and terrain information to establish the problem or opportunity would greatly assist in defining the task environment. The sequencing of information beginning with the commander's intent, followed by the mission and then the situation would also improve the communication of the plan to subordinates. Additionally, the sequencing of guidance, by priority and purpose, which refers to the subordinate's problem space would also aid in the communication of the plan. Finally, the study recommends that the format include a separate paragraph which addresses possible contingencies in order to stimulate their formulation and dissemination.

TABLE OF CONTENTS

	Page
I. INTRODUCTION.....	1
II. SEQUENCING INFORMATION FOR UNDERSTANDING.....	3
*INTRODUCTION.....	3
*IMPORTANCE OF STRUCTURE IN THE COMMUNICATION PROCESS....	4
*DUAL ROLE OF THE OPERATIONS ORDER.....	4
*PRIMACY OF INFORMATION TRANSMITTED AND THE COGNITIVE PROCESS.....	6
*CONCLUSIONS.....	7
III. THE CONTENTS OF THE OPERATIONS ORDER.....	9
*INTRODUCTION.....	9
*COMMAND AND CONTROL DOCTRINE.....	10
~COMMAND AND CONTROL THEORY.....	11
~VISION OF THE OPERATIONAL ENVIRONMENT.....	11
~CURRENT ARMY C2 DOCTRINE.....	14
*ORDERS CONTENT INDICATED BY GROUP DYNAMICS THEORY.....	19
*THE EVOLUTION OF THE ORDERS FORMAT.....	21
~BEFORE THE ADVENT OF THE STANDARD ORDERS FORMAT....	23
~THE EMERGENCE OF A STANDARD ORDERS FORMAT.....	25
~THE CURRENT OPERATIONS ORDER FORMAT.....	29
~CONCLUSIONS.....	30
IV. CRITICAL ANALYSIS OF THE CURRENT FORMAT.....	31
*THE TASK ENVIRONMENT.....	32
*THE PROBLEM SPACE.....	35
V. CONCLUSIONS AND RECOMMENDATIONS.....	38
APPENDICES	
A. BACKGROUND AND LITERATURE REVIEW.....	41
B. PROPOSED DEFINITION OF C2.....	46
C. COMMAND AND CONTROL THEORY.....	49
D. OPORD ELEMENTS RELATED TO TEAM FUNCTIONS.....	53
E. OVERVIEW OF THE HISTORICAL EVOLUTION OF THE OPORD.....	54
F. EBEN SWIFT'S OPERATIONS ORDER FORMAT, 1906.....	59
G. 1940 OPERATIONS ORDER FORMAT.....	60
H. OPERATIONS ORDER FORMAT BEING INSTRUCTED IN CGSC.....	62
LIST OF FIGURES	
1. Relationship between OPORD paragraphs and functional requirements.....	32
2. The synthesis of the problem from the information on the environment.....	33
3. General outline of the proposed operations order format.....	39
ENDNOTES.....	64
BIBLIOGRAPHY.....	76

1. INTRODUCTION

The combat order constitutes the primary instrument used by a commander to translate his decision into action.'

Dr. Lothar Rendulic, Generaloberst a.D., 1947

Command and Control (C²) has long been regarded as a key element in the conduct of battles and wars. Based upon the expected nature of combat, the available equipment and, in some cases, societal influences, armies develop C² doctrine which prescribes the preferred method of command and control. From the doctrine organizations are formed, equipment procured, systems developed, and techniques and procedures implemented. If the doctrine is sound, command is effective, control is efficient and communication is assured. Within this system resides our operations order format. It is one of the mechanisms which connect the prescribed doctrine with field execution. The operations order itself is the link between C² doctrine and effective operations, between concept and plan, between thought and guidance and between mind and matter. Its purposes are to communicate the plan of the commander, to insure all essential information is included, to establish a uniform procedure of issuing guidance, and to facilitate quick reference during the course of operations. "The ideal is that the action of troops shall never be delayed by the absence of orders."²

The orders format emerged due to the operational requirement for standard guidance when directing combat operations. The orders format evolution was based primarily upon operational requirements, repeated use, and continuous adaption through trial

and error. Unfortunately, changes to the format have been usually reactive rather than anticipatory as shortfalls are uncovered and corrective measures taken during the conduct of operations. Also, the resultant changes usually reflect the immediate demands of combat operations rather than a systematic evaluation of the future operational environment, the corresponding command and control doctrine and the logical role of the operations order format within the projected command and control system. From this background our current operations order format has emerged. The current form and content of the operations order format may not be sufficient for communicating guidance and insuring effective command and efficient control of AirLand Battle operations.

Within the last 20 years great strides have been made in the study and analysis of human thought processes, organizational communications and group dynamics. This monograph will apply the relevant principles surfaced in these fields to assess the sufficiency of the orders format. Additionally, the information requirements indicated by projected AirLand Battle command and control doctrine will be compared to the elements of information represented in the current format. This analysis will be complemented by a review of the evolution of the orders format which will determine the historical operational requirements for the information elements depicted in the previous formats. The study will conclude with a critical analysis of the current form and content of the operations order and propose some possible modifications to the format which are intended to improve its efficiency and effectiveness.

II. SEQUENCING INFORMATION FOR UNDERSTANDING

...the mind is highly selective about information to which it attends and that which it uses. The mind remembers some things of importance but forgets a great deal and never even attends to most of the information it physically receives. '

John D. Steinbruner, 1974

INTRODUCTION

The efficient communication of the operations order (OPORD) requires a format that will both assist the formulation of the concept by its writer and the comprehension of its concept by its reader. The operations orders issued must be flexible to take into account the unique nature of each situation yet be detailed enough to aid the writer in composing an order with all required information. To accomplish this, the operations order format must avoid the extremes of specificity or generality. It must not be so specific as to limit its application to the infinitely variable situations typical of combat. Conversely, it must not be so general as to obviate the advantages inherent in structured communications. However, no matter how eloquent, detailed, or brilliant the intended plan, unless the concept is understood and remembered by the subordinate leaders, the plan will not be executed. Thus, the orders format should account for cognitive processes common to its receivers so as to facilitate understanding. To optimize the operations order format, we must sequence its elements so that the mind can quickly and efficiently assimilate the guidance necessary to conduct the envisioned combat operation. The optimization of the form of the OPORD includes an analysis of structure in communications, the recognition of the dual role of the operations order, the

consideration of the primacy of information transmitted first and the integration of information sequencing with the cognitive processing of the mind. The importance of structured formats to the communication of concepts is thus dependent upon establishing basic principles of common cognitive processing which apply to its receivers.

IMPORTANCE OF STRUCTURE IN THE COMMUNICATION PROCESS

The use of a common structured format to communicate similar type information has been empirically proven to be an efficient and effective means of communicating information.² Within the military, the emergence and continued use of operations orders in combat operations also reflects both the need for structured communications and the important role that the operations order plays in our current command and control system.

One purpose of peace time training is to render technique as nearly automatic as possible, thus leaving the mind free to solve the always new situations of recurrent emergencies. In the field of combat orders, this function is served when officers are told in advance what the substance and form of a combat order should be in any probable type of action.³

DUAL ROLE OF THE OPERATIONS ORDER

The operations order performs two functions in relation to the receiver. First it presents the solution to the higher commander's problem in that it identifies the higher units situation and gives a solution to the problem in terms of the entire unit's tasks, purpose and concept of operations. This is the task environment for the subordinate commander. Secondly, it confronts the subordinate with his own unique problem. The subordinate must determine his portion of the higher units situation, tasks, and concept and develop his unit's purpose,

tasks, and concept to best accomplish what he's been told to do. This, in turn, defines the subordinate's problem space. Although the problem space will be related to the task environment, research has indicated that it is important to distinguish the two in communicating information.⁴

Related to the separation of the problem space from the task environment is the phenomenon of sub-conscious information processing. "A great deal of information processing is conducted apparently prior to and certainly independent of conscious direction and that in this activity the mind routinely performs logical operations of considerable power."⁵ This cognitive process may account for a certain degree of misinterpretation of combat orders and may create cognitive dissonance within the receiver when confounding his problem space with the task environment. This occurs when the subordinate is presented the problem space of the higher commander, e.g., the enemy and friendly situation. At this time, the subordinate commander may consciously and/or subconsciously develop his own unique solution to the higher commander's problem. Thus, the subordinate commander may develop a set of tasks and concept to the higher commander's problem which may be contradictory or inconsistent with the actual solution developed and being communicated by the higher commander. The subordinate commander's mind then tends to reject information or guidance that is inconsistent with his own preconceived solution. The result may be misinterpretation, cognitive dissonance or a convolution of the subordinate's actual problem space with the higher's problem space. This problem of identification and information processing relates to the actual

functioning of the mind in developing solutions and understanding directed concepts.

PRIMACY OF INFORMATION TRANSMITTED AND THE COGNITIVE PROCESS

The ideal sequencing of information would correspond exactly to how and in what order the mind processes the information in constructing its vision of the task environment and in its logical operations in developing a solution to the problem space.

Research in cognitive psychology has led to a number of generalizations about behavior. Perhaps the most important generalization is that the active processing of information is a serial process that occurs in a memory of limited capacity, duration, and ability to place information in more permanent storage. Consequently, people appear to keep the information processing demands of complex problem-solving tasks within the bounds of their limited cognitive capacity by utilizing heuristics that are highly adaptive to the demands of the task.⁴

An important aspect of the serial processing of information is the influence of order. Generally, information presented first has primacy over subsequent elements of information.⁷ In the Dyer *et al.* study of 54 squads, statements at the beginning of the platoon operations order were more likely to be remembered than statements in the middle, or at the end by the squad leaders. An examination of the statements recalled by the squad leader by subject matter experts indicated that those that were remembered were not those that were the most important to the operation but those that were sequenced first.⁸ Additionally the mind tends to take elements of information sequentially and append additional elements of information in accordance with their relationship with the first. "In this sense the goal of all thinking is the attaining of unity."⁹

The cognitive activity of information processing has also been compared to the receipt and understanding of words and sentences. Numerous authors have inferred cognitive processes through a study of speech patterns and interpretations.¹⁰ Alan and Litman conducted a micro analysis of the domain of discourse to arrive at a logical model of the communications process. From their analysis, inferences as to the optimum sequencing of information can be determined. Using a simplified framework for planning and action reasoning, they describe techniques which allow receivers to receive and understand communicated sentences, sentence fragments, indirect speech and superfluous information. Their theory proposes that communication is enhanced by the knowledge of the sender's overall goals or plan. Thus, knowledge of the sender's goals allows the receiver to relate following information, albeit fragmented, indirect or superfluous, to the overall sender's communication goal and thus allow for improved understanding and effective communications.¹¹ This sequencing of information also corresponds to the emerging writing styles in both the military and private business to place "the bottom line up front" in all correspondence.¹² Thus, this theory would infer that written communications formats be sequenced with the overall goals or strategy as the beginning element of the format.

CONCLUSIONS

The above findings appear to have several implications for the operations order format. First is that, if possible, the task environment information should be separated from the problem space. For instance, beginning of the operations order with the situation paragraph and then following with the mission and

concept of operations may combine the problem space with the task environment. As previously indicated, the presentation of the situation first may also cause either sub-conscious or conscious processing of the wrong problem and result in cognitive dissonance by subordinate commanders.

Secondly, the primacy of information presented first should require that the most important elements be listed first in the format. Since the enemy situation is so transitory and has such a high degree of uncertainty, it should not be the first item in the format. Current literature, argues that the commander's intent is the most important aspect of operational plans. The commander's intent is either explicitly described in a separate paragraph of the standard format or it is inferred in the current mission and execution paragraphs.¹³ It is clear that any of the three paragraphs (commander's intent, mission, or concept of operations) is more important than the current situation paragraph and thus should precede it in the orders format.

Finally, the inferential nature of the cognitive process would also indicate that the broad goals and objectives as described in the commander's intent and/or mission paragraphs should precede all other elements of information. All information following these paragraph become relevant because of their influence on the attainment of the goals or objectives. In Section Three, I will continue the application of these principles when examining current C² doctrine and the evolution of the operations order.

III. THE CONTENTS OF THE OPERATIONS ORDER

In any sort of society...somebody has to give the orders. Orders have to be carried out. But whenever it is possible, it is a very good thing to explain why an order is given, why things are done a certain way...Let the man see a bit further along the chain in which he is a link.'

Field Marshal Sir William Slim

INTRODUCTION

A separate though related issue to the form of the operations order is its content. The form of the operations order concerns itself with establishing the optimum sequence of information to insure both understanding and remembering. The content of the operations order examines what minimum information is required in order for the subordinate receivers to accomplish their given missions. We have seen that the content of orders also assists in the cognition of the plan through the inclusion of goals and objectives at the beginning of the order. Clearly this is the starting point for further analysis as to the minimum information requirements that should be included in the orders format.

The contents of the operations order are dictated by the operational requirements indicated in the current command and control doctrine and the critical elements of guidance necessary for group performance. Perhaps the most profound yet complex influence is made by current command and control doctrine. (Appendix B proposes the definition of C² that will be used for the analysis of our current C² doctrine) C² doctrine is itself a function of many complex and interrelated factors. Sound doctrine must be developed based upon applicable theoretical principles as well as a clear vision of the projected operational environment. This section will develop a theoretical basis for developing a vision of the operational environment and determine the

corresponding C² doctrine expected to succeed in the environment. Using the C² doctrine as a basis, a comprehensive analysis of the information requirements of the operations order will then be conducted examining relevant group dynamics theory, historical requirements and subjective assessments of past and current military experts. Establishing the minimum essential information requirements for the conduct of military operations will dictate the paragraph headings of the operations order format. For the operations order to be a guide for the sender as well as the receiver, its paragraph headings should make provisions for including the minimum essential information needed to direct combat operations.

COMMAND AND CONTROL DOCTRINE

Doctrine provides the linkage between theory and practice. Theory establishes a body of principles by which the conduct of war can be explained. It is derived through a logical analysis of cause and effect relationships in past and present conflicts. Theory is used to estimate the nature of future war. The vision of future war then becomes the basis for the development of relevant doctrine which, in turn, prescribes the optimum method for conducting future war. The resultant doctrine specifies force design, materiel acquisition, professional education, and individual and unit training. From doctrine evolve specific techniques, standard operating procedures, and all the mechanics by which armies conduct war. The operations order is at the bottom of this chain. It is a procedure, a technique for implementing command and control doctrine within the postulated operational environment according to the controlling principles

of the applicable theory. Successful execution of operations is dependent upon a connection between sound techniques, reliable doctrine, and an accurate vision of future war derived from applicable theory. Thus, to analyze the contents of the operations order requires first the establishment of the applicable theory, vision of the operational environment and command and control doctrine.

COMMAND AND CONTROL THEORY

The utility of developing an applicable command and control theory is to discover the operative principle(s) of war that will both reflect the nature of future conflict and provide the basis for the formulation of applicable C² doctrine. The operative principle of C² theory that is used in this monograph is:

The greater the predictability of the operational environment, the more important is *control* in achieving tactical and operational success. Conversely, the greater the uncertainty of the operational environment, the greater the importance is *command* in achieving success. Both command and control must be present, to a certain degree, to enable a force to achieve success.

This principle is fully developed in Appendix C and connects the vision of future war with the corresponding C² doctrine that will prescribe the basic contents of the operations order.

VISION OF THE OPERATIONAL ENVIRONMENT

The vision of the operational environment must take into consideration numerous factors and influences. Just a few of these include: the expected combatants, the political and strategic goals and objectives, the type, number and amount of means (forces) employed, the duration and intensity of the conflict, the impact of technology, innovations in doctrine and tactics, and the training proficiency and readiness of the

forces. The following vision of the future operational environment will assume that the conflict will be against the USSR in a mid to high intensity war fought in multiple theaters of operations. This specifies most of the above listed influences, others will be highlighted in the analyses of C² doctrine. Although this conflict may be the least likely it also is the highest risk and thus should dictate the primary doctrine of the US Army. Finally, the analysis will focus on the influence that many of the above listed factors have on the predictability or uncertainty of the operational environment. Expected uncertainty is the critical parameter in the previously postulated principle of C² theory and is key to the eventual establishment of a relevant C² doctrine.

The vision of the future battlefield and the corresponding required C² doctrine have been the subject of several recent innovative studies as well as the object of the Army's field manuals. A vision of the future battlefield is provided in FM 100-5, Operations, when it describes the high and mid-intensity battlefields as "likely to be chaotic, intense, and highly destructive. They will probably extend across a wider space of air, land and sea than previously experienced."² FM 100-5 goes on to list several important features of the AirLand battlefield that will influence operations. Some of these include³:

(1) The highly mobile, highly lethal combat forces will cause the battlefield to be *nonlinear in character*. The speed of modern forces together with the lethality of supporting arms will make the intermingling of forces inevitable.

(2) The *lethality and accuracy* of supporting systems will allow for the concentration of enormous combat power at decisive points.

(3) The range and detection capability of *modern sensors*

together with *modern communications* will provide the commander with timely information on enemy deep locations and activities. This will allow the commander to attack enemy forces with missiles, MLRS, tube artillery, fixed-wing aircraft, attack helicopters, SOF, and nonlethal means such as electronic jamming and deception. (However, this same capability allows the enemy to attack our own maneuver, communications and sensing systems deep. The result is likely to be an extension of the non-linear battlefield to even greater depths and a compounding of confusion, chaos and uncertainty.)

(4) The employment of *Nuclear, Biological and Chemical (NBC) weapons* will further increase the destructiveness, increase the tempo, cause severe psychological stress and contribute to making the future battlefield chaotic and unpredictable.

(5) *Command and control* will be increasingly difficult due to the fluid nature of the battlefield. Communications will be frequently interrupted by enemy actions at critical times causing units to fight while unable to communicate with higher headquarters and adjacent units. This will require subordinate leaders to act on their own initiative within the framework of the commander's intent in order to achieve success.

Major John T Nelson, in his monograph on the adoption of *Auftragstaktik*, uses FM 100-5, experiences from the National Training Center (NTC), and a collection of views from theorists and other writers to come up with a similar view of the operational environment. He states that: "Fluid situations, fleeting opportunities, and chaotic conditions will require rapid decision-making under conditions of great uncertainty. Furthermore, speed will often demand a conscious sacrifice of precision."⁴ He concludes with a recommendation for the formal adoption of an *Auftragstaktik*-like approach in command and control doctrine.

Similarly, Major Stephen E. Runals, in his monograph on the sufficiency of current army command and control doctrine, highlights the nature of the modern battlefield and its impact on doctrine and procedures:

The fundamental nature of high intensity warfare will always entail a high degree of uncertainty and chaos. A

key element in an army's ability to consistently achieve tactical success is a conscious decision to tailor its organization and tactical C² principles, procedures, and techniques to best take advantage of these constants of warfare.³

Current analysis of the characteristics of the future battlefield indicates that there will be a high degree of uncertainty as to the activities, intentions and maneuver of both friendly and enemy forces. Although advances in intelligence gathering, processing and dissemination have also improved, these advances are a two edged sword. They may increase the likelihood of prediction but are themselves vulnerable to detection, destruction or, as a minimum, disruption. According to the developed C² theory and supporting analysis by both Runals and Nelson, U.S. Army doctrine should reflect an emphasis on the command aspects of command and control doctrine due to the high degree of uncertainty present in modern combat.

CURRENT ARMY C² DOCTRINE

*An army's fundamental doctrine is the condensed expression of its approach to fighting campaigns, major operations, battles, and engagements. Tactics, techniques, procedures, organizations, support structure, equipment and training must all derive from it. It must be rooted in time-tested theories and principles, yet forward-looking and adaptable to changing technologies, threats, and missions.**

FM 100-5, Operations

FM 100-5 is the capstone manual for tactical and operational doctrine for army forces. In the section on Command and Control it provides the fundamental doctrine which should influence the content and form of the operations order used at these levels. FM 100-5 specifies several aspects of command and control doctrine which reflect the emphasis on the command portion of the doctrine. It states that the command and control system "must facilitate freedom to operate, delegation of authority, and

leadership from any critical point on the battlefield." It describes the characteristics of plans and orders, and specifies other aspects of the command and control system which will support the doctrine.

According to FM 100-5, plans should be the basis of action but commanders should "expect considerable variation from plans in the course of combat. The plan should allow the greatest possible operational and tactical freedom to subordinates and be flexible enough to permit variation by subordinates in pursuit of the commander's goals." It goes on to add that in insuring that subordinates are restricted as little as necessary, they should be given mission orders that "specify *what* must be done without prescribing *how* it must be done." FM 100-5 then specifies several critical elements of information that should be provided in plans and orders: (1) Initial plans will establish the commander's intent, a concept of operations and the responsibilities of subordinate units. (2) Plans must communicate the intent of the commander two levels above. (3) Commanders must know the responsibilities of the units on his flanks and those units in support of his operations.'

Had FM 100-5 left the guidance on minimum essential information at this level of detail, the system would be consistent with the vision of the operational environment. However, later on in FM 100-5 it prescribes other planning elements of information that should be included. These include:

(1) The scheme of maneuver that: outlines the movement of forces; identifies objectives or areas to be retained; assigns responsibilities for zones, sectors, or areas; prescribes formations or dispositions when necessary; identifies maneuver

options which may develop during an operation.

(2) The allocation of forces and design of supporting plans or annexes that include the plans for fires, barriers, air defense priorities, electronic warfare (EW), deception efforts, combat support, and combat service support arrangements.

(3) A detailed plan for maneuver for defensive counterattacks, when appropriate.

(4) Supplementary control measures such as routes, axes, objectives, and battle positions for implementation on order.

(5) Designated axes of advance, routes for the commitment or movement of the reserve, or for the forward or rearward passage of one unit through another.

(6) Identification of air axes for the maneuver of attack helicopter and air cavalry units or for the helicopter movement of air assault units and other forces.

(7) The planning and designation of multiple routes throughout the area of operation for field artillery, air defense, air support, engineer, military intelligence, and logistic units and the close control of the routes used by these elements.

(8) The planning and control of airspace that will insure coordination between air and ground movements.

This is fairly detailed and definitive guidance for the preparations of plans and orders. It is supplemented by the detailed guidance in FM 101-5, Staff Organization and Operations. FM 101-5 makes provisions for all the information required in FM 100-5 and then some. (Its sample Corps operation order has over 100 paragraph and sub-paragraph headings; this does not even include those information elements listed in each of the annexes). Although FM 100-5 proposes that the future battlefield will be chaotic, non-linear, and unpredictable its guidance on planning reflects an underlying assumption that the tactical combat events can be foreseen and predicted and that subordinate elements can be controlled and synchronized; partially through active measures but mainly through preliminary planning.

Effective tactical planning is the best way to assure synchronization in execution. Usually, the more effective the plan, the less synchronization will be hostage to active command and control once operations begin.¹²

The implications are clear: first that there will be sufficient time available to develop and disseminate these detailed plans before the environment significantly changes; secondly that the enemy will react in accordance with the pre-planned course(s) of action; and finally that major assets are kept under the control of the planning headquarters to commit in accordance with the anticipated actions of the enemy. The approach proposed in this section of FM 100-5 points directly to a reliance on control in the conduct of operations. Reliance on control exercised through detailed planning instead of active measures is still reliance on control. It is dependent upon an operational environment that is relatively predictable, stable and with operations conducted at a tempo which are slow enough to allow for detailed planning. This conflicts directly with the previously developed vision of the operational environment.

Although some degree of tactical planning is essential for both command and control, there appears to be a degree of inconsistency between what is envisioned as the operational environment and what is prescribed as planning requirements in FM 100-5 and FM 101-5.¹³ Conversely, FM 100-5 proposes other methods that emphasize the command aspects of C² doctrine that will promote freedom and flexibility. First is the establishment of operating procedures, that quickly and routinely issues required warning orders and situation updates. This in turn, depends upon standardized training of units and staff that insure a

commonality of knowledge and understanding. Secondly, is the positioning of tactical leaders at locations where they can both influence the immediate tactical actions as well as respond to opportunities at other locations. Thirdly, is the development of mental flexibility and independence in commanders that will allow them to change directions, main efforts, priorities and force locations without hesitation and without direction during the course of the battle.¹⁴

Complementing these methods described in FM 100-5 are those that were derived by Major James Willbanks in his thesis on reducing the need for electronic communications in AirLand Battle command and control. Major Willbanks historically develops several critical aspects of the command and control system which have been successful in previous conflicts. These include: unit cohesion, commonly understood doctrine, decentralization of C², forward command presence, proper incorporation of technology, and effective unit/staff organizations.¹⁵

In conclusion, the currently prescribed planning guidance included in both FM 100-5 and FM 101-5 appears to be inconsistent with the C² doctrine and vision of the operational environment articulated in FM 100-5, and previously developed C² theory. It is clear that the operations order format and the guidance included in the issued orders are critical parts of the command and control system. However, the orders format is just one portion of a command and control system composed of many interrelated and interdependent parts all serving to insure that operations are both effective and efficient. Thus, any comprehensive analysis must be done in the context of the system

as a whole. Accordingly, I will use the basic C² doctrine described in FM 100-5, current group dynamics theory and a historical analysis of the operational demands for orders information, to assess the sufficiency of the current orders format as specified in FM 101-5.

ORDERS CONTENT INDICATED BY GROUP DYNAMICS THEORY

The theory of group dynamics has resulted in numerous and diverse models describing how groups accomplish assigned tasks. The recent study by Nieva *et al.* provides a comprehensive yet concise model of group interaction. They describe four major categories of team performance functions (*orientation, organization, adaption, and motivation*) which specify what a team does interactively to accomplish assigned objectives or goals.¹⁶

Nieva *et al.* further outline three major characteristics of the performance functions which are applicable to their analysis of information requirements. First, the functions focus on task accomplishment and what a team must accomplish internally to achieve results. Thus, the functions directly relate to team, not individual, information requirements.¹⁷ Second, the functions pertain to more than one activity and thus may require more than one type or element of information to facilitate accomplishment. Third, these functions take on a relative degree of importance depending upon the nature of the task and task environment. That is, one or the other function may become critical to the task accomplishment compared to the other functions. This would imply that for specific task environments, information provided the group that pertains to the operative critical functions(s) would be essential for task accomplishment. Unfortunately Nieva *et al.*

nor any other discovered study has established what task environment characteristics relate to which priority function(s). Correspondingly, the information requirements pertaining to these functions cannot be placed in priority and must be inferred from related analyses.

To begin the analyses, the four functions that groups accomplish interactively will be compared with the related elements of information that are required by military units to perform the functions. Appendix D examines these functions and postulates, in terms of the current operations order format, what elements of information are required to affect their conduct.

The comparison of functions with elements of information in the current operations order reveals the intrinsic role of the current operations order paragraphs. The commander's intent paragraph^{1*} appears in all four functions information requirements and thus emerges as a critical element of information for group performance. Similarly the information provided in the task organization, mission, concept of operations, and sub-unit instructions relate to both *orientation* and *organization* functions. Only the situation and service support paragraphs pertain to only one function; *orientation*. The information elements required to accomplish team functions strongly affirm the need for paragraphs 2, 3, and the commander's intent paragraph in the current operations order format.

From the opposite perspective, there is very little information included in the current format that addresses the team functions of *adaption* and *motivation*. The current operations order format does not specify in format nor allow in practice the

inclusion of critical assessments of past and present performance by subordinate units. Additionally, the current format does not make provisions for the inclusion of motivational comments that could influence team performance in future operations. Within our current command and control system, these aspects of team functions are usually communicated by electronic voice or person to person contact.'* Only the commander's intent paragraph provides some information that relates to both *adaption* and *motivational* functions. Also, information pertaining to contingencies or possible reactions to changes in the operational environment that would specify some aspects of *adaption* has no specified paragraph in the current operations order. This information is dispersed throughout the order usually as be-prepared or on-order missions.

In summary, the group performance functions surface two major deficiencies in our current operations order format. Very little information is included in the current operations order format pertaining to the *adaption* and *motivation* functions. Also, the information pertaining to the *organization* and *orientation* functions is spread throughout the order in multiple paragraphs. The group performance functions together with the previously developed cognitive processing theory are useful in examining the historical evolution of the operations order.

THE EVOLUTION OF THE ORDERS FORMAT

An historical analysis of the evolution of the operations order can provide a useful perspective on both the form and content of our current format. The current operations order format was derived empirically from the operational demands of

field execution throughout the history of our country's conflicts. It represents the evolution of both the operational requirements dictated by combat and the existing command and control doctrine. Using the previously developed analysis on cognitive processes, C² theory and doctrine and group dynamics theory, the form and content of previous operations order formats will be analyzed. Finally some comparisons of our current operations order content will be made together with some inferences as to its sufficiency.

The development and use of standard orders formats throughout history has been influenced by numerous and interrelated factors. Martin van Creveld in his comprehensive treatment of command, control and communications in war describes five factors that have influenced the development of systems of command throughout history.²⁰ Based upon the various influences of these five elements, van Creveld identifies six major periods of distinctly different command and control systems.²¹ Closely related to van Creveld's historical analysis, is the chronological development of our own operations order format. Appendix E traces the evolution of the order from its inception to the form which is in practice today. Basically the orders format developed in three stages: (1) That period prior to 1905, when there was no established operations order format and orders were given either orally or in written free form. (2) The period from 1905 through 1954 which used the basic orders format established by Major Eben Swift in 1905. (3) The period from 1954 through the present time which witnessed a major modification and expansion of the orders format.

BEFORE THE ADVENT OF THE STANDARD ORDERS FORMAT

*Ragland, the General, turned to his aide
"Ride, Nolan, down to the valley," he said.
"Ride and bid them take that battery where
The guns on the left are frowning there."*

Alfred Lord Tennyson

Lord Ragland's order on October 25, 1854 sent the Light Brigade into the "Valley of Death" at Balaklava. Of the 670 British troopers who began the charge, only 200 returned from the heroic yet futile charge on the Russian guns. Generally, the abortive charge was blamed on the improper reference to the word left. The word "left" in the mind of the brigade commander, Lord Cardigan, meant one thing when applied to the British front and another when compared to the Russian. This episode of the Crimean War, which was subsequently immortalized by Tennyson, represents only one of many examples where faulty orders have resulted in catastrophe.²²

The list is a long one. Gallipoli, Borodino, Gettysburg, Stalingrad, Kut el Amara, Arnhem, Plevna. A million lives flung into the cauldron here and there have not appreciably left their mark. Blunders continue to be made. Leaders give impossible orders based on sketchy appreciations. Men obey them and die miserably. Battles which are skilfully won receive great attention. Battles lost by muddling are forgotten. Hence the aura of glory which surrounds war.²³

The evolution of the operations order has not been without cost. The mistakes in communicating basic guidance for the execution of operations have been numerous and profound. Some lessons learned have been assimilated and later forgotten or rejected as the impact of the mistakes become absorbed in the "glory which surrounds war." However, as the art of war continued to progress so has the methods and procedures for making decisions and issuing orders.

The art of command and control has evolved with the ways, means and ends of the conduct of war. Ancient commanders commanded relatively small forces with weapons which were limited as to their range and lethality. During this period of "local" battles fought by two opposing forces within a relatively small area, commanders issued primarily verbal orders on terrain where the commander could point out the scheme of maneuver and objectives to his subordinates. Dissemination of the orders were limited and the tempo of combat was slow by to modern standards. The commander's role was one of leadership by example and he sought to instill enthusiasm in his subordinates and motivate his men through personal contact. His place was at the head of his forces and control of his subordinate units was decentralized to their respective leaders.

As the ways, means and ends of war progressed so did the requirements for command and control evolve and change. Armies became larger, their movement and resupply more complex and their deployment before and maneuver during the battle more important to battle outcome. Command of the armies from the front became increasingly more difficult and the positioning of the commander required that he be placed both to see the battlefield and to control and coordinate his subordinate commanders. The command and control mechanisms of these larger armies brought about the need for staffs or personal assistants to the commander to carry verbal or written orders to subordinate commanders. Although the size of the forces had increased and the lethality of weapons had also improved, the C² difficulty was more a function of increased dispersion than increased tempo of the battle. Thus the

commander could send individual messengers with specific instructions tailored for each subordinate to control his actions before and during the battle.²⁴ The written orders that emerged from this environment varied considerably in form and content. However, the information communicated reflects those elements of information required of subordinates to effectively execute the commander's plan.

In 1925 Major C.H. Corlett conducted an historical analysis of the evolution of the field order.²⁵ He examined written orders from the earliest known order, 1643, through those written during the American revolution, Napoleon's campaigns, the Mexican War, the Civil War, the Franco-Prussian War, the Spanish-American War, and the Philippine-American War. He found that the art of issuing orders varied considerably between countries and even regressed in single countries.²⁶ Additionally, he found major elements of information contained in these orders which point towards the form and content of existing orders formats. He discovered that the orders included information that conveyed to subordinates:

...what they must overcome in the way of an enemy, in other words, their difficulties, any assistance they can expect from parallel or supporting troops, how the difficulties are to be overcome, the part that each element is to take in overcoming the difficulties, the manner in which the maintenance or upkeep is to be applied and finally the location of the coordinating or directing agency.²⁷

THE EMERGENCE OF A STANDARD ORDERS FORMAT

The increasing demands for written orders coupled with the increases in the complexity of war brought about the emergence of standardized operations order formats to facilitate communications. Von Moltke's issuance of mission-type orders in

the Franco-Prussian war is credited with allowing subordinates the freedom to exercise initiative within an overall plan designed to direct the effects of the combat.²⁸ The Germans steadily progressed in their development of an effective command and control doctrine. The tactical studies written by von Verdes contributed to the progress and in 1905, General Griepenkerl's letters on applied tactics contributed to the doctrine further.

Griepenkerl's work was translated by the English, French, Greeks, Japanese and eventually the Americans and had a profound effect on the orders format. General J.F. Bell and Major Eben Swift, Commandant and Assistant Commandant of the Staff College at Ft. Leavenworth obtained a copy of Griepenkerl's work and used it to develop an orders format for the American Army. Major Swift's book was approved by the War Department in 1906 and codified the written orders format that remained relatively unchanged until 1954.²⁹

Major Swift's manual prescribes a four section order composed of: the caption, the margin, the body and the ending. The body itself consisted of five paragraphs. Although he does not specify paragraph heading for each paragraph, he does describe each paragraph's contents. (See Appendix F)³⁰

The operation order format of 1906 had several unique aspects. Paragraph 2 contained both the mission of the unit as a whole and the concept of operation. Additionally, paragraph 3 appears to consolidate the guidance to each subordinate unit in one location. Giving each subordinate commander a single paragraph within which to find his specific role and tasks. Also the 1906 format does not appear to make any provisions for

communicating the purpose of the operations to subordinates or giving the rationale for selecting the overall tasks and concept that are included in its paragraph 2 or the subunit tasks included in paragraph 3. Finally, with the advent of a standard format that is issued to all subordinate commanders, we see a distinct absence of subjective assessments by the commander about the performance of his subordinates. There is, however, an ability to vary the detail or style of instruction to each subordinate because the instructions to each subordinate is essentially contained in one paragraph.

There are several advantages to this format. First is the simplistic approach to the overall operation. All information pertaining to the unit as a whole was placed into paragraphs 1 and 2. The tasks to be accomplished and the concept of the operation are included in one paragraph: paragraph 2. This eliminates the redundancy that we now have in our format between the mission statement and the concept of the operation. Secondly, the 1906 format attempts to divide the subordinate unit's task environment from the problem space. The task environment is defined by the limits and constraints imposed by the whole unit's mission and concept of operation listed in paragraph 2, while the subordinate's problem space is defined primarily by his assigned tasks in paragraph 3. Only paragraph 1 mixes the task environment with the problem space by giving information pertaining to both in one paragraph.

This first operation order format was used in World War I with varying degrees of success. Initially, the American Expeditionary Force (AEF) planners lost sight of the purpose of

the operation order format. The format was to facilitate communicating the commander's plan of action. Instead the orders format became an ends in itself. Staff's and commanders went into laborious detail specifying minute instructions for their subordinates. This nearly proved fatal. For in the attempt to provide subordinates complete and detailed guidance, the AEF frequently provided no guidance. "In the American Expeditionary Force elaborate and complete written orders to attack were often received *after* the hour when the attack should of started, thus destroying the coordination they were intended to provide."³¹

However, many army corps and divisions within the AEF improved their published orders as combat operations continued. This, in part, was due to the increased proficiency of the units involved in the operations.³² In the final analysis however, the orders format used adhered closely to that specified in Major Swift's adopted regulation, thus indicating its tactical utility.

The operations order continued to change throughout the period following its adoption. Appendix E traces the evolution of the order throughout these years. Generally, modifications focused on paragraphs 2 and 3 while the orders format became more detailed and more compartmented. Titles were introduced for each of the paragraphs, paragraph 2 was broken into subparagraphs and the task organization information was moved around. The orders format displayed in Appendix G incorporates these changes and reflects the orders format that was used by U.S. forces during World War II.

Overall, Major Swift's format remained relatively unchanged and was successfully employed in all U.S. conflicts from 1906

through 1954, including WW I, WW II and the Korean War. However, further modifications were to made that resulted in a substantial change in 1954.

THE CURRENT OPERATIONS ORDER FORMAT

The orders format finalized in 1954 is, generally, the same format currently reflected in FM 101-5. The major changes focused on the decision paragraph and the tactical missions for subordinates. The decision paragraph was split into two parts. The mission statement articulated the tasks of the unit as a whole together with the purpose of the operation. The concept of operation was moved to paragraph 3 and preceded, what would be called, sub-unit instructions or tasks to subordinate units. Overall the format became more detailed and highly structured, having a paragraph for almost each type of information. However, it did make provisions for providing the rationale for the operation in the mission paragraph. This was intended to resolve the problem of subordinates not understanding the intent of the operations so that they could function within the spirit of the order as well as the letter.³³

As expected the format has continued to evolve as modifications are made by schools and centers to adjust to the changing operational environment. Although the May 1984 version of FM 101-5 constitutes the official army approved operation order format, the Command and General Staff College (CGSC) at Ft. Leavenworth is currently instructing a modified format as indicated in Student Text (ST) 100-3, Battle Book. (Appendix H) ST 100-3 specifies even more detailed instructions on the writing of the operations order. It provides additional quality

information by including both a subparagraph for the higher commander's intent in paragraph 1 and a subparagraph in paragraph 3 for the executing unit commander's intent. However, it also includes numerous additional subparagraphs and sub-subparagraphs³⁴ that tend to make the order overly compartmented and which causes excessive redundancy in the issued guidance.³⁵

CONCLUSIONS

The analysis of the existing command and control doctrine, group performance function requirements and historical evolution of the order has surfaced several perspectives from which the operations order sufficiency can be assessed. The current operations order, as established in 1954, is relatively untested whereas, Major Swift's order format was successfully used in three major wars. Additionally, the use of the current operations order format during combat operations in Vietnam also surfaced several shortfalls in its sufficiency and applicability to non-armored warfare.³⁶ Overall the pre-1954 format is generally based on a scheme of co-action of subordinate maneuver units. The structure of the format emphasizes the allocation of resources, the designation of zones and sectors and the assignment of objectives. Little of the order is dedicated towards the synchronization of subordinate units or to a scheme requiring control. Conversely, the current format has as its focus the concept of operation. This paragraph outlines in great detail the concept of synchronization and coordinated activities of subordinate maneuver elements as well as the plethora of combat support assets that have been retained under the executing unit's control.³⁷

IV. CRITICAL ANALYSIS OF THE CURRENT FORMAT

As I have pointed out more than once, orders, instructions, reports and messages will have to abandon their many official frills and step out stark naked into the reality of war...it is seldom necessary to turn it [order] into a ritual so holy that it is considered almost sacrilegious not to begin an operation order with "information" ... "intention," and so on, etc., etc. All orders will have to be as brief as possible, and not as formal as possible. They should be based on a profound appreciation of possibilities and probabilities, which, as I have explained, will generally lead to a series of alternatives. Therefore an order should not be suited to one operation but to several possible phases of this operation. It should possess a central idea and several radii working out towards the final circumference--victory to you and defeat to the other man.'

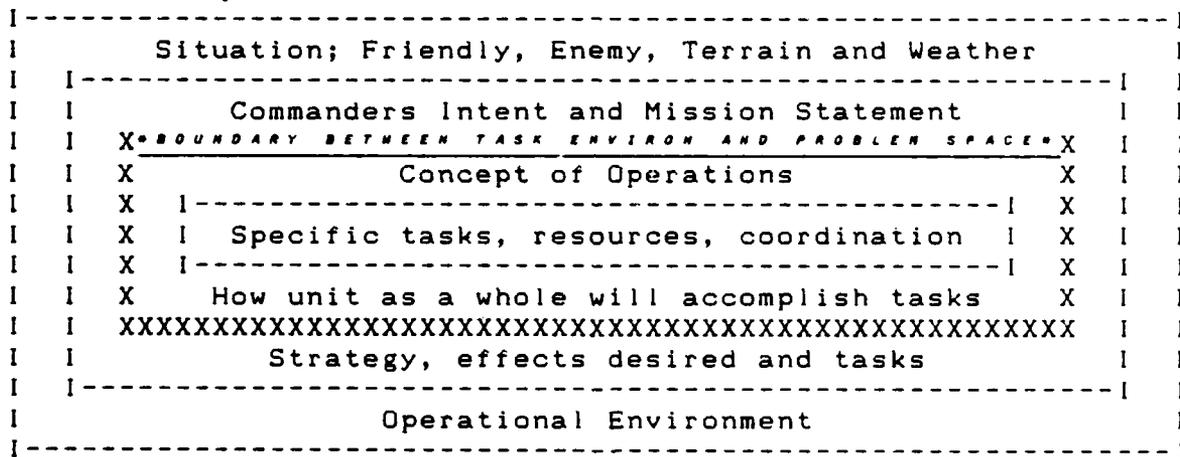
J.F.C. Fuller, Armoured Warfare

The analysis of the suitability of the current format will examine the overall architecture of the orders format in accomplishing both form and content requirements and highlight specific deficiencies. The evaluation will be done from the perspectives of the writer and the receiver and relate the information elements to both individuals' task environment and problem space.

As indicated previously, the current operations order has two main functions: it establishes the task environment within which subordinates must function and defines the problem space that they will need to develop a solution. Figure 1 depicts the role of the major elements of the order in accomplishing these functions as determined by the previous analyses. In general, the situation, commanders intent, and mission paragraphs define the task environment for the subordinates. Correspondingly, the concept of operations, subunit instructions and coordinating instructions outlines the problem space for subordinates. Although the current concept of operations provides information on both the higher's overall scheme and the subordinate units'

specific roles within the scheme, the current emphasis in this paragraph is on the subordinates' coordinated roles. This contrasts sharply with operations orders pre-1954. In those orders, paragraph 2 focus was on the overall units tasks and scheme rather than the subordinates. The subordinate's instructions, *vis a vis* his problem space, was contained almost entirely in his corresponding subparagraph in paragraph 3. The contribution and inter-relationship of these paragraphs in accomplishing these communications tasks is critical to establishing the operations order format.

Figure 1. Relationship between OPORD paragraphs and functional requirements.

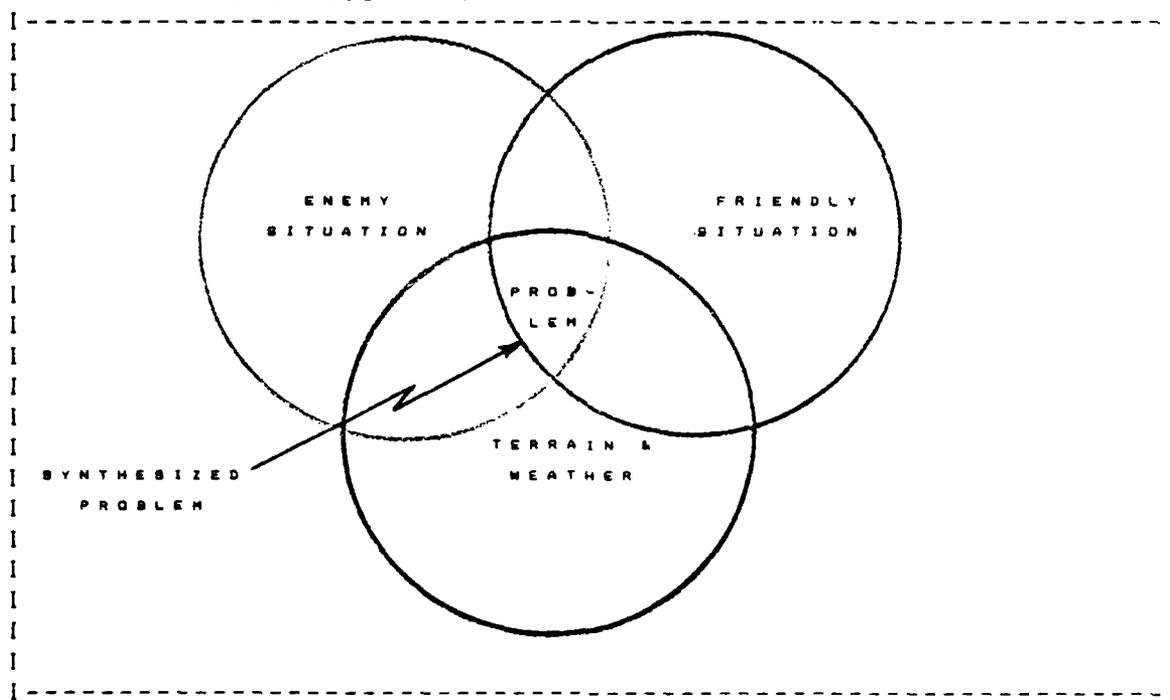


THE TASK ENVIRONMENT

The situation defines the outer boundary of the task environment. It is relevant in the influence that the current enemy disposition and intentions, friendly units (higher, lower, left, right, front and rear) dispositions and intentions and other environmental influences (weather and terrain) have on the commander's decision. It was this information that the commander considered when arriving at his decision. It is the intersection of these three information sources that forms the essence of the

situation because the commander had to synthesize this information in arriving at his problem. (See Figure 2). Thus the "Situation" paragraph should articulate the commanders "problem" that he considered when arriving at his decision (Intent, Mission, and Concept of Operation). The current practice of separating the information types into their respective categories in the Situation paragraph does not express the commander's synthesis of the information. This paragraph should articulate the problem, the opportunity, or the changed conditions which stimulated the commander to begin the decision process.

Figure 2. The synthesis of the problem from the information on the environment.



The next level of the task environment is the establishment of the approach to the identified problem. The commander develops his approach by taking into consideration all those factors which influenced his problem space. He arrives at an approach that establishes the desired effect on the enemy that he

will try to achieve consistent with his problem space. The desired effect on the enemy or operational environment is included in his Commander' Intent paragraph. This becomes the rationale for selecting the essential tasks that his unit will perform and the development of the concept of operations and subunit tasks that forms the basis of his own subordinate commanders problem space. The essential tasks that are included in the mission paragraph are determined from both his problem space (concept of operations and subunit instructions from his higher) and those he determined based upon his selected desired effect.² Once the commander establishes his problem, the results he is trying to achieve and his specific tasks; he then sets about determining the plan to accomplish the tasks determined. The resultant task organization, concept of operation, and subunit instructions constitutes how he intends to accomplish the tasks and defines the problem space for the next level of subordinate commanders.

The sequence outlined above portrays how the commander has arrived at his decision. However, the order is written more for the subordinate's benefit not the writer's. As indicated previously, the subordinates should be given the solution to the higher commander's problem before being presented with the higher commander's problem. This is to preclude cognitive dissonance as well as capitalize on the cognitive inferential process and thus aid in the understanding and rememberance of the plan. Thus, in sequencing the information concerning the task environment to subordinates, the order should begin with the commander's intent, followed by the mission, and then followed by the situation.

Again, the situation referred to is the synthesized problem or opportunity developed in the earlier argument not the current situation paragraph. The result is that the order communicates to the subordinate in sequence: (1) What effect the commander is trying to achieve (2) What essential tasks need to be accomplished to achieve the desired effect and (3) What brought about the need for the operation. These three elements comprise the critical information essential to the orientation and motivational functions required for team performance and largely define the task environment.

THE PROBLEM SPACE

The next step in developing the optimum operation order format is establishing the form and content of those elements of information that define the problem space and address the group performance functions of organization and adaption.

In defining the subordinate commander's problem space, the higher commander must also accomplish several organizational and adaption functions. He must match his available resources to the task requirements and make the necessary adjustments. He must determine what coordination is required and visualize the sequence of tasks and the pacing of operations that will best accomplish his tasks. He must determine the priority of the tasks to be accomplished and balance those tasks across his subordinates according to their resources and his scheme of operations.³ Finally, he must make provisions for his unit and his subordinate units to adapt to the dynamics of combat.

From the subordinate's perspective, he is interested in establishing his problem space. He must know about the

operational environment within which he will be functioning. He must know what resources he will have available for the operation, and he needs to know his specific tasks and role in relation to the overall concept. Within these constraints he will then devise the task environment and problem space for his subordinate commanders.

In accordance with the cognitive theory, the most important information and that element of information that best represents the central theme of the operation should be sequenced first. The subordinate will append the relevant subsequent elements of information to the initial element as he builds his visualization of the problem. The higher commander's concept of operation is the primary element which dictates his problem space. Thus, the execution paragraph and its concept of operation should be listed first. Within the execution paragraph should also be his specified unit instructions. Next, he should be told what resources he will have to accomplish those assigned tasks. Finally, he should be given information concerning the overall operational environment which he will have to deduce the relevant information pertaining to his portion of the plan.

Based upon this reasoning, the optimum format for communicating information relevant to the subordinate's problem space would be: first, concept of operations; second, subunit instructions; third, task organization; fourth, information (this would include enemy, friendly, terrain and weather information); fifth, service support; and sixth command and signal. Not all of these elements would require a separate paragraph.

In examining the above information elements, all the major tasks required of the group performance functions are addressed except for adaption. The visualization of future conflict and the corresponding C² doctrine indicate that the battlefield will be typified by a high degree of uncertainty. The current format focuses on the development of a single detailed plan of operations. Contingencies for changes in the expected operational environment are handled indirectly through subunit instructions or as an aside in the concept of operations. The standard format should handle contingency planning directly.⁴ A separate paragraph titled "Contingencies" should be added following the command and control paragraph. It is placed at the end because it covers activities and guidance should the current plan be changed. This paragraph should have several subparagraphs each with two sub-subparagraphs. Each of the contingencies' first sub-subparagraph should state the operational situation and define what events would trigger the contingency. The second paragraph would give a general scheme of maneuver that would designate the general concept envisioned to meet the situation. Overall, the order focus should change from developing one detailed plan to developing one general plan with multiple contingencies.⁵

V. CONCLUSIONS AND RECOMMENDATIONS

The study examined the sufficiency of the current operations order format using all available fields of study. The format was examined from both the perspective of the cognitive processes of the receiver and the information requirements needed to accomplish group performance objectives. Additionally, a detailed analysis of C² doctrine was conducted together with an historical examination of the evolution of the operations order to help determine the information requirements unique to military operations.

The analysis indicated that the the current operations order format did not facilitate the understanding of the commander's plan by its receivers, it did not reflect the realities of the postulated operational environment nor the emphasis on command that is dictated by our command and control doctrine espoused in FM 100-5. Additionally, the orders format superficially treated several critical functions required to accomplish group performance objectives and did not adequately separate information pertaining to the subordinate's problem space with his task environment.

The study surfaced several possibilities for improving the order. The development of a situation paragraph that synthesizes the related elements of friendly, enemy, and terrain information to establish the problem or opportunity would greatly assist in defining the task environment. The sequencing of information, beginning with the commanders intent followed by the mission and

then the situation, would also improve the cognition of the plan by subordinates. Additionally, the sequencing of specific guidance that refers to the subordinates problem space by its priority and purpose would also facilitate the communication of the plan. Finally, the establishment of specific provisions for the inclusion of contingencies in the orders format would facilitate their devisal by commanders and their staffs.

Figure 3, Recommended Operations Order Format, depicts the proposed changes to the current format. Throughout the major paragraphs, the emphasis is on broad guidance and the definition of a simple plan by which adjustments can be made quickly and efficiently.

Figure 3. General outline of proposed operations order format.

- ```

|-----|
| 1. Commander's Intent |
| 2. Mission |
| 3. Situation (Revised) |
| 4. Execution |
| a. Concept of Operations |
| b. Tasks to Subordinate Units |
| 5. Task Organization |
| 6. Information |
| a. Friendly |
| b. Enemy |
| c. Command and Signal |
| d. Service Support |
| 7. Contingencies |
| a. (Name) |
| (1) Situation |
| (2) Concept |
b. etc.

```

The orders format must be adaptable to highly dynamic environments and therefor must lend itself to rapid composition and dissemination. Concise, quality information defining only enough information that subordinates need and can absorb should be included in the order. Finally, our techniques and procedures as reflected in the operations order format must be consistent

with how we expect to fight and win the AirLand Battle. To espouse a command-oriented philosophy and have our procedures reflect a control-dominant approach is to risk confusion and defeat.

There has been a substantial increase in the body of knowledge on human thought processes, group dynamics theory, and the theory and conduct of war. Additionally, the operational environment within which wars are fought has also undergone substantial changes. This study has attempted to highlight some related factors which indicate that a change in the operations order format is required. In a profession where mistakes result in the loss of human lives, our soldiers, our army and our nation deserves the most effective and efficient systems available. The systems must be developed with an understanding of the people who must use them and be consistent with a doctrine which is expected to succeed. In the case of the operations order format, there is need for a change.

## APPENDIX A, BACKGROUND AND LITERATURE REVIEW

*Catastrophes like the Somme dull our senses with their enormity. Ant hills of disjointed ideas become substitutes for clear thought. ...Military skill of today must be vital and effective. The orders which govern that skill are the instruments which employ men and material. On our side in particular neither can be expendable. The margin is so slim there could hardly be room for blunders.'*

Captain H.B. Chamberlain, Australian Army, 1959

The operations order is the linchpin that connects several fields of study. The order is the centerpiece in the sender-message-receiver communications channel. Thus applicable communications theory applies to its use and optimization. Also the order provides essential guidance for the attainment of organizational goals and objectives. Thus applicable theories on group dynamics should influence what elements of information should be included to optimize organizational performance. Finally the order implements the command and control doctrine which is expected to succeed in the next war and thus should meet the operational requirements and reflect the Army's current command and control philosophy.

Although there is a large base of empirical studies covering a plethora of communications, organizational performance and group dynamics subject areas. There are few studies that deal with the role that communication variables such as written formats have on organizational performance. Morris and Snyder in their 1984 paper found only two basic types of communications studies on how communications relates to overall performance at

the individual and organizational level of analysis. The first investigated the relationship between the communications phenomena and perceived organizational outcomes. The second examined the relationship between communication characteristics and independent measures of performance at the individual level of analysis. In their study, Morris and Snyder determined that there were two communications variables within the studied (12) organizations that were strongly related to critical organizational performance measures: the quality of supervisory communication variables and the information exchange within the peer work groups.<sup>2</sup> In the military these two activities are accomplished in tactical operations, in part, with the operations order. The operations order is a critical means of communicating supervisory guidance and disseminating information within the subordinate units.

Similarly Nieva, Fleishman and Rieck conducted an extensive literature review on the relationships between various team or group characteristics and collective performance in a study for the U.S. Army Research Institute (ARI) the Behavioral and Social Sciences. They found that "studies concerned with the effect of the communication mode( e.g., vocal, written and visual) are least common of all, and no real conclusions can be drawn at this stage."<sup>3</sup> They did, however, find two studies, Federman & Siegel (1965) and Johnston (1966) that determined that non-task related communication retarded group performance.<sup>4</sup> Nieva *et al.* also developed a team performance model and provisional taxonomies for team performance which are used in this study to develop the theoretical information requirements for military organizational

performance in combat operations.

Another ARI study conducted by Dyer, Bennet, and Sulzen in 1985 focused specifically on the operations order influence on organizational performance. In their literature review, they uncovered several relevant studies on the role of the operations order in combat operations. Their study indicated that McKay, Gianci, Hall and Taylor (1959) conducted a review of the combat literature of World War II and the Korean War and found that communication and planning within small Infantry units were critical to unit success.<sup>9</sup> They also discovered that Scott, Meliza, Hardy and Banks (1979) had conducted an armor/anti-armor platoon attack exercise and found that successful units were more likely to have delivered the platoon leader's OPORD to all crew members than unsuccessful units. The percentage briefed in successful units was 83% versus 59% in unsuccessful units. Finally they cite another ARI study conducted in 1980 (Henrikson *et al.*), that identified critical elements that should be communicated within each OPORD paragraph.\* The Dyer *et al.* study itself examined 54 squads in the conduct of a movement to contact mission. The study determined that in the test operational situation, the OPORD content had only a small relationship to mission outcome.

The Henrikson *et al.* study is useful in several respects. First, it combines several sources of information to arrive at its conclusions. These sources include: historical engagement simulations data (actual training exercises conducted using weapon effects instrumentation on participating tactical units),

a literature review of pertinent studies, historical combat narratives and soldier memoirs, and finally using the expert opinions of the research staff based on their engagement simulation and actual combat experience.' Secondly, they take the operations order format as a given, expand each paragraphs' contents into essential elements and then use the format to measure leader planning proficiency.

A well formulated plan, according to FM 100-12, Staff Officers' Field Manual- Staff Operations and Procedures (1977) is one that takes into account all things normally included in all Army Operation Orders: objective, enemy situation, friendly situation, concept of operation, execution, and command and signal. An analysis of tactical operations often reveals that the success or failure of an operation can be traced to the adequacy of the plan.\*

Available information and empirical data clearly indicate that task oriented organizational communications play a critical role in organizational performance. Additionally, available data indicates that the military operations order format plays an essential role in communicating information critical to the tactical execution of military operations. However, there is no available information or study that examine the sufficiency of the form and content of the operations order in the execution of military operations. For example, no available study examines the operation order as an independent variable and the organizational performance of tactical units as the dependent variable. Thus the optimum sequencing of information in the operations order format which will facilitate understanding and learning by the subordinate leaders must necessarily be inferred solely from a theoretical perspective using available literature on cognitive processes and communications. Likewise, there is a

lack of objective data establishing the essential information requirements needed to direct group task oriented performance. Although Henriksen *et al.* study establishes a useful baseline of essential elements to be included in the operations order and Dyer *et al.* conducts a useful analysis of required group information requirements based upon the Nieva *et al.* taxonomies, they fall far short of establishing an operations order format that is consistent with our current or projected C<sup>2</sup> doctrine.

## APPENDIX B. PROPOSED DEFINITION OF C2

*He who has clear definitions can command.*<sup>1</sup>

Goethe

Before outlining the theory, vision of the operational environment and doctrine for command and control, it is first necessary to define the concept. Although the term "command and control" has been in common use for some time, there appears to be a general lack of agreement as to its definition. The various references differ in their treatment of the concept. JCS Pub 1 describes command and control as the exercise of authority whose functioning includes the arrangement of personnel, equipment, communications, facilities, and procedures in the planning, directing, coordinating and controlling of forces. FM 100-5, Operations describes command and control as the exercise of command whose essence lies in applying leadership, making decisions, issuing orders, and supervising operations. FC 101-55, Corps and Division Command and Control, indicates that command and control synchronizes and coordinates combat power on the battlefield and provides direction to the fight. It goes on to make a distinction between command and control explaining that command is a process by which the will and intent or the

commander is infused among subordinates. While control is a process by which inconsistent subordinate behavior is identified and corrected.<sup>2</sup>

The above definitions differ in their approach to the concept. JCS Pub 1 looks at C<sup>2</sup> in terms of how it is exercised and performed in the context of the conduct of war. FM 100-5 looks at command and control as a means towards an identified end...command. Finally FC 101-55 looks at command and control as a process focusing on directing and regulating. All definitions relate command and control, to some extent, to the will of the commander or a means by which the commander communicates his intentions.

Another approach of examining command and control is taken by LTC Timmerman in his article "Of Command and Control and Other Things". In it he proposes that command and control are two competing activities. Generally he typifies command as a function of leadership which results in effective operations. Whereas control is a function of management which results in operations that are efficient. Both command and control contribute to success.<sup>3</sup> The correct balance between command and control defines the optimal approach to combat and thus establishes C<sup>2</sup> doctrine. An adequate definition of command and control should take into consideration this differentiation as well as their competing requirements in exercising leadership and management in the conduct of AirLand Battle. The following proposed definition for command and control will incorporate the

competing requirements inherent in management and leadership, and relate those concepts to the tenets of AirLand Battle:

Command and Control (C<sup>2</sup>): Command is the exercise of leadership. Command provides purpose, direction, motivation, and continuity to subordinates and is the key to achieving effectiveness. Command focuses on results and by its design allows subordinates the freedom to exercise initiative and agility. Control is the exercise of management. It allocates resources, directs and coordinates activities and regulates forces. Control focuses on process and strives to achieve efficiency. Within AirLand Battle, control results in the allocation and distribution of forces across the depth of the battlefield and synchronizes forces at decisive points and times. Command and control are the processes used by the commander to disseminate his will and intentions and to apply available combat power in the conduct of combat operations.

## APPENDIX C, COMMAND AND CONTROL THEORY

*Theory will have fulfilled its main task when it is used to analyze the constituent elements of war, to distinguish precisely what at first sight seems fused, to explain in full the properties of the means employed and to show their probable effects, to define clearly the nature of the ends in view, and to illuminate all phases of warfare in a thorough critical inquiry.<sup>1</sup>*

Carl von Clausewitz, On War

Closely related to the definition of Command and Control (See Appendix B) is the C<sup>2</sup> theory that will serve to construct the vision of the future battlefield. C<sup>2</sup> theory, as with other theories of war, should operate according to the principles cited by Clausewitz above. It should fully identify the means employed, show their probable effects and clearly define the ends desired. It should enable the practitioner to distinguish between what appears to be fused concepts, and allow for a clear understanding of the process being examined.

The theory of command and control must distinguish the difference between the fused concept of command and the concept of control. As Clausewitz states "war consists as a continuous interaction of opposites,"<sup>2</sup> so is the concept of command and control an interaction of conceptual opposites. C<sup>2</sup> concerns itself with the two major forces in war, the moral and the physical. Although neither force can be separated, each react and interact based upon varied influences. "Military activity is never directed against material force alone; it is always aimed simultaneously at the moral forces which give it life, and the two cannot be separated."<sup>3</sup>

The concept of command concerns itself primarily with the

moral domain of war. The process of command is the exercise of leadership. The means of command/leadership is the provision of purpose, direction, motivation and continuity to the force as a whole.<sup>4</sup> Successful command is characterized by operations which are effective. Successful command does not guarantee overall tactical or operational success. However, it does insure that available resources are effectively employed and that failures are not caused by an absence of leadership or the failure to exercise initiative by subordinate commanders to accomplish goals and objectives. Subordinates which are effectively commanded are aware of the purpose of the operation and understand their role in the attainment of specified objectives that will achieve the purpose. They are also motivated to pursue the objectives and are not distracted by internal unit disruptions and turbulence. Units that are effectively commanded conduct operations typified by speed, agility, flexibility, and initiative.

The concept of control concerns itself primarily with the physical domain of war. The means of control is the active management of assets. The ends of control is the efficient employment of assets on the battlefield that minimizes risk and yet provides sufficient resources at the required locations and times to allow for success. Like command, control does not insure success but only gets the right amount of resources to the right location and at the right time to allow for success in accordance with the plan of operations. Operations that are well controlled are typified by a high degree of coordination and synchronization and a strict adherence to operational plans and directives.

Successful combat operations are dependent upon control to provide the right assets to the right place at the right time and upon command to effectively employ those assets to achieve the desired results once in place. However, there are several characteristics of war which influence both command and control. Clausewitz discusses three of these characteristics in his book On War. First is that of moral forces and effects. These include hostile feelings by the participants, the emotional and psychological effects of danger, varied intellectual abilities of key leaders, and other emotional factors that are unquantifiable and thus not subject to universal rules. Second is that of positive reaction which represents the dynamics of two competing forces and the resultant effects of action, counteraction and interaction that makes combat unpredictable. Finally, he proposes that the uncertainty of all information convolutes the perception of reality, confuses the participants and thus increases the likelihood that operations will be a function of genius or luck.<sup>5</sup> These characteristics of war, directly influence the predictability of operations and thus profoundly affect command and control theory.

Conversely, the conduct of war requires the application of force against the enemy's force and thus entails the allocation and control of forces. To effect the application of force depends upon a degree of predictability of the operational environment. Based upon the essentiality of both command and control and the characteristics of war, the following principle of C<sup>2</sup> theory is proposed:

The greater the predictability of the operational environment, the more important is control in achieving tactical and operational success. Conversely, the greater the uncertainty of the operational environment, the greater the importance of command in achieving success. Both command and control must be present, to a certain degree, to enable a force to achieve success.

This principle of C<sup>2</sup> theory defines the operative characteristic of the nature of war as uncertainty. The degree to which uncertainty dominates the nature of future conflict will define whether C2 doctrine should reflect an emphasis on command versus control.

APPENDIX D. OPORD ELEMENTS RELATED TO TEAM FUNCTIONS

| <u>FUNCTION</u> | <u>TASKS</u>                                                                                                                                                                                                                                                                                                                  | <u>OPORD ELEMENTS</u>                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ORIENTATIONS    | (1) Elicitation and distribution of information about team goals.<br>(2) Elicitation and distribution of information about team tasks.<br>(3) Elicitation and distribution of information about member resources.                                                                                                             | Unit goals are usually provided in the mission stmt and/or in the cdr's intent. Tm. tasks are included in the mission stmt, concept of ops., and ops. overlay. Resources are listed in the task org., referred to in sub-unit instr, and coord. instr. The situation paragraph also provides information on team tasks and<br>(1) Elicitation and distribution of information about member resources. |
| ORGANIZATION    | (1) Matching member resources to task requirements.<br>(2) Response coordination and sequencing of activities.<br>(3) Activity pacing<br>(4) Priority assignment among tasks.<br>(5) Load balancing of tasks by members.                                                                                                      | The concept of ops. designates units with resources and specific objectives together with required coordination, sequencing and pacing. Priority of tasks and load balancing is provided in several paragraphs: cdr's intent, mission stmt., concept of ops., sub-unit instr, coord. instr., and as listed in the task org. The ops. overlay also accomplishes several of these tasks.                |
| ADAPTATION      | (1) Mutual critical evaluation and correction of errors.<br>(2) Mutual compensatory performance.<br>(3) Mutual compensatory timing.                                                                                                                                                                                           | These are largely dynamic functions based on ongoing performance and feedback. However, the measure of success given in the cdr's intent provides the framework that allows adaption. Also "be prepared" and on-order missions allow for adaption and mutual compensatory timing and performance.                                                                                                     |
| MOOTING         | (1) Development of team performance norms.<br>(2) Generating acceptance of team performance norms.<br>(3) Establishing team-level performance-rewards linkages.<br>(4) Reinforcement of task orientation.<br>(5) Balancing team orientation with individual competition.<br>(6) Resolution of performance-relevant conflicts. | Norm development, acceptance, rewards and reinforcement of task orientation are accomplished outside the framework of the current ops order. The provision of the rationale of the operation, normally included in the cdr's intent, does provide relevancy to assigned activities and thus influences motivation and orientation.                                                                    |

APPENDIX E, OVERVIEW OF HISTORICAL EVOLUTION OF THE OPORD FORMAT

| <u>DATE</u>    | <u>PROMULGATING DOCUMENT**</u>                                          | <u>DESCRIPTION</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 Apr<br>1894  | Eben Swift<br>Lecture to<br>inf and Ca-<br>valry School                 | This lecture established the standard form for the operations order and together with tactical staff rides and map exercises led to the establishment of a tactical applicatory method of systematically solving tactical problems, arriving at a decision and disseminating the tactical plan. Major Eben Swift developed the system through an analysis of Von Verdy du Vernois and Otto F. Griepenkerl's works. The order proposed by Swift was instructed at Leavenworth and came into standard use within the army. <sup>1</sup>                                                                                                             |
| 1 Feb<br>1905  | Field<br>Service<br>Regulations<br>(FSR)<br>1905 (amend-<br>ed to 1908) | This established the first "regulation" pertaining to the operation order format. The FSR generally adopted Major Swift's format and recommended orders be issued in the following sequence: <sup>2</sup> <ol style="list-style-type: none"> <li>1. Information concerning the enemy and our own troops in the vicinity.</li> <li>2. Intentions of the commanding officer.</li> <li>3. Duties of the various fractions of the the command.</li> <li>4. Orders for baggage trains and ammunition columns.</li> <li>5. Location of the commander at the beginning of the operation; also, when necessary, place for delivering messages.</li> </ol> |
| 10 Jul<br>1906 | Adoption<br>of Eben<br>Swift's<br>Book as<br>Guidance                   | The War Department adopted Eben Swift's book titled, <u>Field Orders, Messages and Reports</u> , as guidance for the Regular Army and organized militia of the United States. The book expanded the above format and specified the form and content of the operations order. The format reflects essentially the same elements as were specified in both Swift's lecture and the previous 1905 FSR. <sup>3</sup> The orders format is listed in Appendix F.                                                                                                                                                                                       |

| DATE           | PROMULGATING DOCUMENT                                            | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21 Feb<br>1910 | FSR<br>1910                                                      | This FSR established Eben Swift's operation order format in regulation and made several modifications to the order that was adopted in his book in 1906. First, it specified a subparagraph under paragraph 3 which information pertaining to all the subunits was to be placed. Second, it indicated that in situations requiring more paragraphs than the format allowed, the additional paragraphs should be included after paragraph 4 but before paragraph 5 (paragraph 5 was to be renumbered as the last paragraph in the order). Additionally, the Eben Swift format included, what we now call Task Organization but what they termed as "Troops", as marginal information listed to the left of the body of the order. This proved infeasible for transmission over telegraph lines. Consequently, this FSR allowed for the information on "Troops" to also be placed after paragraph 2 in an unnumbered paragraph headed by the word "Troops". Finally, it took away the option of not following this format by directing that the format be followed whenever detailed orders were issued. <sup>4</sup> |
| 21 May<br>1913 | FSR<br>1913                                                      | This FSR made no changes to the above established format. <sup>5</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 19 Mar<br>1914 | FSR<br>1914 w/<br>changes 1-11<br>to include up<br>to 31 Jul '18 | This FSR included the requirement to list the referenced map in the heading of the order. All other elements of the format remained the same. <sup>6</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2 Nov<br>1923  | FSR<br>1923                                                      | This FSR maintains the basic format that is listed in the above references. It does expand the definitions of the paragraphs. It terms the contents of paragraph 2 as including the "scheme of maneuver." This is the first time that this term appears in the format. Additionally, this format removes the option to insert additionally numbered paragraphs between paragraphs 4 and 5. It also establishes provisions to list distribution at the end of the order. Finally it allows for the listing of appended documents at the end of the format. This appears to be a forerunner to our current Annexes. <sup>7</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| PROMULGATING   |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DATE           | DOCUMENT                      | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 26 Sep<br>1932 | FSR<br>1932                   | This FSR again retains the major paragraphs of the Eben Swift order. It also expands on the explanations of the paragraphs and emphasizes the importance of not only detailing the scheme of maneuver but also the effect desired by the conduct of the scheme of maneuver. Paragraph 5 is expanded to include several subparagraphs pertaining to signal communications. It specifies not only lines of communication but also the location of principal next subordinate commanders' command posts.*                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 19 Aug<br>1940 | FM 101-5<br>w/changes<br>1-10 | This was the first Field Manual numbered 101-5 that addressed staff officer duties. The order format again reflects the previously established form. The description of paragraph 2 is described as containing the what, when, where and how of the force as a whole. It also allows for paragraph 2 to be broken into subparagraphs to include boundaries, etc. It specifies that the "Troop" paragraph be placed following paragraph 2. This removed the option of placing the troop information in the left hand margin which was permitted in the previous formats. This orders format was the one used during WWII.*                                                                                                                                                                                                                                                                                                                            |
| 13 Jul<br>1950 | FM 101-5                      | The 1950 manual represents a transition manual from the old format to what would become the new format. The task organization is placed at the beginning of the order above paragraph 1. Each paragraph is given a specific name as well as a description. (General Situation, Mission, Tasks for Subordinate Units, Administrative and Logistical Matters, Command and Signal Matters) For the first time, paragraph 2 is termed the mission and includes the statement of the task to be accomplished by the unit as a whole <u>and</u> the purpose of the operation. However, the paragraph itself is still broken into two subparagraphs and the examples listed still reflect the old operation order format. Paragraph 3 remained essentially the same as in the previous order and thus the order format did not make any provisions for what before was termed the scheme of maneuver. The other paragraphs remained essentially the same.†* |

| DATE           | PROMULGATING DOCUMENT        | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 Nov<br>1954 | FM 101-5<br>w/changes<br>1-4 | This manual establishes our current operations order format. It names the paragraphs: (1) Situation, (2) Mission, (3) Execution, (4) Administration and Logistics, and (5) Command and Signal. It adds a subparagraph to paragraph 1 titled "Attachments and Detachments" and specifies that paragraph 2 Mission will <u>not</u> be broken down into subparagraphs. Its most important contribution is to establish a Concept of Operations subparagraph 3a under Execution followed by other subparagraphs addressing the subunit instructions of major subordinate maneuver units. These are also followed by the artillery subunit paragraph and other combat and combat support elements instructions. The last subparagraph in paragraph 3 is coordinating instructions which equates to the old paragraph x. The remaining paragraphs appear relatively unchanged. The examples reflect the stated role of the mission statement except that purpose is superficially treated. <sup>11</sup> |
| 19 Jul<br>1960 | FM 101-5                     | Follows the format established in the 1954 FM closely. Defines paragraph 2, Mission, as including the WHO, WHAT, WHEN, and WHY and, if necessary, the WHERE. However, it specifically precludes including the HOW. The HOW is to be included in paragraph 3a. It further expands paragraph 3 and refines the subunit instructions portion of the paragraph. <sup>12</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 14 Jun<br>1968 | FM 101-5                     | This order follows the 1960 format very closely. <sup>13</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 19 Jul<br>1972 | FM 101-5                     | This format again closely approximates the previous format. Paragraph 3 is modified by including two sub-subparagraphs under the concept of operation titled "maneuver" and "fires". The subunit instructions portion of paragraph 3 continued to be expanded to include instructions to combat service support commands. Paragraph 4 was renamed "Service Support" but otherwise stayed the same. <sup>14</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| DATE | PROMULGATING<br>DOCUMENT | DESCRIPTION |
|------|--------------------------|-------------|
|------|--------------------------|-------------|

|                |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 May<br>1984 | FM 101-5 | This is the current officially approved order format. Again it approximates the format established in 1954. The definition of the Mission paragraph, however, reverted from the who, what, when, where and why definition included in the 1960-1972 manuals to the definition listed in the 1950 manual. That is, "A clear concise statement of the task to be accomplished by the command <u>and</u> its purpose." Other paragraphs remained generally the same. <sup>15</sup> |
|----------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|               |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Apr<br>1987 | ST 100-3 | This Student Text is the primary document used to instruct CGSC students on order writing. It includes several changes to the format listed in FM 101-5. Paragraph 1 will include the higher commander's intent. Additionally paragraph 3a will be the issuing commander's intent. This is followed by the other paragraphs of the previous order. The concept of the operation paragraph is further expanded to include the contribution of selected elements of combat power to the overall scheme of maneuver. These sub-subparagraphs are then followed by the normal subparagraphs listed in paragraph 3. In nearly all cases, the major paragraphs and subparagraphs are expanded to include greater detail and greater compartmenting of information and guidance. <sup>16</sup> |
|---------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

\*\* The documents listed give a continuous history of the United States Army operation order format from its inception to its current form as taught in CGSC.

APPENDIX F, EBEN SWIFT'S OPERATIONS ORDER FORMAT, 1906\*\*

1. *The caption* is the heading of the order and consists of the official designation of the issuing officer's command, the place, the date, and often the hour and minute of issue, the kind of series, and the number of the order.

2. *The margin*, headed "TROOPS," is used in certain orders. It occupies from one-third to one-half of the page, on the left, and contains a statement of the component parts of the command as well as its subdivision into fractions for information, protection, and various missions. When no marginal distribution of troops is needed the order is written entirely across the page.

3. *The body of the order* is divided into numbered paragraphs without headings.

*Paragraph 1* contains information of the enemy and so much of the general situation of our own troops as it is desirable for subordinates to know.

*Paragraph 2* contains the objective of the movement or instructions covering as much of the general plan as is considered necessary to insure proper cooperation in the movements of all parts of the command.

*Paragraph 3* contains the disposition of the troops adopted by the commander to carry out the second paragraph, including the tasks assigned to each of several fractions of the command.

*Paragraph 4*, with few exceptions, contains all the orders necessary for the regimental train, ammunition columns, and sanitary troops.

*Paragraph 5*, with few exceptions, contains the necessary information as to the place where the commander can be found or where messages can be sent.

4. *The ending* contains the authentication of the order by an appropriate signature, and a statement showing how the order is communicated to the troops.

\*\* Major Eben Swift, Field Orders, Messages and Reports. Washington: Government Printing Office, 10 July 1906, p.17.

APPENDIX G, 1940 OPERATIONS ORDER FORMAT\*

Form 5

GENERAL FORM FOR A COMPLETE WRITTEN  
FIELD ORDER (1) (2) (3)

Issuing unit  
Place of issue  
Date and hour of issue

FO \_\_\_\_\_

Maps: (Those needed for an understanding of the order.)

1. INFORMATION.--Include appropriate information covering-
  - a. *Enemy*.--Composition, disposition, location, movements, strength; identifications; capabilities. Refer to intelligence summary or report when issued.
  - b. *Friendly forces*.--Missions or operations, and locations of next higher and adjacent units; same for covering forces or elements of the command in contact; support to be provided by other forces.
2. DECISION OR MISSION. (1) --Decision or mission; details of the plan applicable to the command as a whole and necessary for coordination.

TROOPS

(Composition of tactical components of the command, if appropriate)

3. TACTICAL MISSIONS FOR SUBORDINATE UNITS. (1) --Specific tasks assigned to each element of the command charged with the execution of tactical duties, which are not matters of routine or covered by standing operating procedures. A separate lettered subparagraph for each element to which instructions are given.
  - x. Instructions applicable to two or more units or elements or to the entire command, which are necessary for coordination but do not properly belong in another subparagraph.
4. ADMINISTRATIVE MATTERS.--Instructions to tactical units concerning supply, evacuation, and traffic details which are required for the operation (unless covered by standing operating procedure or administrative orders; in the latter case, reference will be made to the administrative order).
5. SIGNAL COMMUNICATION.
  - a. *Orders for employment* of means of signal communication not covered in standing operating procedure. Refer to signal annex or signal operation instructions, if issued.
  - b. *Command posts and axes of signal communication*.--Initial locations for unit and next subordinate units; time of

opening, tentative subsequent locations when appropriate.  
Other places to which messages may be sent.

-----  
*Commander.*

Authentication  
Annexes (listed):  
Distribution:

#### NOTES

- (1) For forms covering paragraphs 2 and 3 or complete field orders for particular operations, see the corresponding check lists of section III.
- (2) Complete oral or dictated field orders follow generally this same form; fragmentary orders conform to appropriate portions.
- (3) a. See paragraph 67 for scope of each paragraph and subparagraph.  
b. The form of the order, such as special methods of indenting, lettering, and heading paragraphs and subparagraphs, is of minor importance.

\*The operation order format was copied verbatim from FM 101-5, Staff Officers' Field Manual, Washington: United States Government Printing Office, August 19, 1940, pp. 96-97.

APPENDIX H. OPERATION ORDER FORMAT BEING INSTRUCTED IN CGSC

(CLASSIFICATION)

Copy \_\_\_\_ of \_\_\_\_ copies

\_\_\_\_\_  
(Issuing Headquarters)

\_\_\_\_\_  
(Place (coord) country)

\_\_\_\_\_  
(Date-time group, month, year)

\_\_\_\_\_  
(Message reference number)

OPERATION PLAN (ORDER) \_\_\_\_\_ (code name if used)  
(number)

Reference(s): Map(s) series

Time Zone Used Throughout the Plan (order)  
(Confirmation Statement - change from verbal orders)

TASK ORGANIZATION:

1. SITUATION

Annex \_\_\_\_\_ (Sketch)

- a. Enemy Forces.
- b. Friendly Forces. (Includes the higher commander's intent)
- c. Attachments and Detachments.
- d. Assumptions (operation plan only)

2. MISSION

3. EXECUTION

a. Intent.

b. Concept of Operation. Annex \_\_\_\_\_ (Operation Overlay)

- (1) Maneuver.
- (2) Fires.
- (3) Counterair Operations.
- (4) Intelligence.
- (5) Electronic Warfare.
- (6) Engineer.
- (7) (Others as needed).1

c. Tasks to Maneuver Units.

d. Tasks to Combat Support Units.

(1) Fire Support.

(a) Air Support.

1. Close air support sorties.

2. BAI mission sorties (corps); nominations (division)

(b) Chemical Support.

(c) Field Artillery Support. (NOTE: may designate specific unit(s), if desired.)

1. General.

2. Organization for combat.

(d) Naval Gunfire Support.

(e) Nuclear Support.

(f) Fire Support Coordinating Instructions.



## ENDNOTES

### I. INTRODUCTION:

1. Generaloberst Dr. Lothar Rendulic, Combat Orders, trans. US Army, report prepared for the Historical Division, US Army, Europe, 1947, p.1.
2. C & GSS quarterly, "Combat Orders", vol 64, March 1937, Tentative Change No. 1, p. 46.

### II. SEQUENCING INFORMATION FOR UNDERSTANDING:

1. John D. Steinbruner, The Cybernetic Theory of Decision, Princeton, New Jersey: Princeton University Press, 1974, p.101.
2. W. Kintsch, "On comprehending stories", In M.A. Just & P.A. Carpenter (Eds.). Cognitive processes in comprehension, Hillsdale, N.J.: Lawrence Erlbaum, 1977, p.238.
3. Alan Pendleton, "On combat orders", Infantry Journal, Mar-April 1936, p.134.
4. H.A. Simon, "Information processing theory of human problem solving", In W.K. Estes(eds), Cognition and social behavior, Hillsdale, N.J.: Lawrence Erlbaum Associates, 1978, p. 275.
5. Steinbruner, p. 92.
6. John W. Payne, "Information Processing Theory: Some Concepts and Methods Applied to Decision Research", In Cognitive Processes in Choice and Decision Behavior. (eds.) Wallsten, Thomas S., Hillsdale, N.J.:Lawrence Erlbaum Associates, Publishers, 1980, p. 95.
7. J.R. Hayes, D.A. Waterman, & C.A. Robinson, " Identifying relevant aspects of a problem text", Cognitive Science, 1977, 297-313, as cited in Payne, p. 112.
8. J.L. Dyer, R.H. Bennett, and R.H. Sulzen, Infantry Rifle Squad Operation Orders-Their Characteristics and Role in Mission Success, ARI Research Note 85-4, Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, Jan. 1985, p.35. The operations orders issued to the squad leaders were not in the standard format. Thus, the importance of each element and the sequence of information communicated were not related to the current OPORD format.
9. John Dewey, Context and Thought, Berkeley, California: University of California Press, 22 August 1931, p. 209.

10. Steinbruner, p. 93; Ulric Neisser, Cognitive Psychology, New York: Appleton-Century-Crofts, Inc, 1967, Chapter 7.; J.F. Allan and D.J. Litman, "Plans Goals and Language", Proceeding of the IEEE, vol. 74, July 1986, pp. 939-947. James Deese, The Psychology of Learning, New York: McGraw-Hill Book Company, 1952, p. 269.

11. Alan and Litman, pp. 939-947.

12. Student Text(ST) 22-2, Effective Staff Communications, Fort Leavenworth: U.S. Army Command and General Staff College, June 1986, p.1-3. ST 22-2 also states that instructors are now teaching the new Army writing style in all TRADOC schools and in refresher seminars. This includes: "Putting the "bottom line" up front, opening your document with the sentence or sentences that best express the major idea you want to get across. Granted, you may have discovered that idea only after a long trail of background research and logical analysis. The reader, however, should not have to repeat that lengthy process. You can and should give him the conclusion at the outset.", p.1-3. Additionally, another study of communications in business, industry and the military indicated that there was a trend in written communications to place the bottomline first in written correspondence. (Edward J. Filiberti, "The Army Standard Operations Order: Has It Kept Pace With the Changing Operational Environment", MSA 685 Integrative Project, Central Michigan University Graduate School, Mount Pleasant, Michigan: Central Michigan University, 20 June 1987, pp. 27-29.)

13. The commander's intent has been a controversial topic for around seven years. FM 100-5 repeatedly refers to the commander's intent in its discussion of operations typified by initiative and agility and as a critical element in conducting AirLand Battle. A separate paragraph for commander's intent has been included as paragraph 3a in the operations order format listed in the US Army Command and General Staff College (USCGSC) Student Text (ST) 100-3, Battle Book, although it is not listed in the format included in FM 101-5. The instruction within TRADOC schools and centers has essentially promulgated the commander's intent as a separate paragraph and its use is common throughout the Army as part of the orders format. The definition of the commander's intent and its role in the orders format has also been the subject of controversy. It is defined in USCGSC ST 100-9, The Command Estimate, as being "The statement of what the higher visualizes the battlefield will look like as a result of accomplishing the mission. This is stated in terms of the status of the enemy and the posture of the unit." FM 101-5-1, Operational Terms and Symbols, defines the commander's intent as "Commander's vision of the battle-how he expects to fight and what he expects to accomplish." Three articles in the August 1987 Military Review also address the different aspects of the commander's intent paragraph. My article proposes that the commander's intent's role within the operations order is to articulate the purpose of the operations, explain the critical "why" of the operations, and establish the measure of success that the unit as a whole and the subordinate units activities

will be compared. I define the commander's intent as "What the commander is trying to achieve and the critical aspects of how he hopes to achieve it." I also indicate that the superficial treatment of the "why" of the operation in the mission statement probably led to the emergence of the commander's intent paragraph. In examining the operations order format listed in FM 101-5, it specifies that the mission statement will include both the task (or tasks) to be accomplished and the purpose to be achieved. This is also supported by FM 101-5-1 where it defines the mission as including a concise statement of the who, what, when, where, and why of the operation. In actual practice, it appears that the commander's intent is assuming the role of providing the rationale for the operation which should be included under the mission statement. Although the commander's intent paragraph is not yet codified in our field manuals and thus not formally adopted as part of the orders format, this monograph will include it as an integral part of the format in its analysis. Its current location will be treated as paragraph 3a and its role will be as I proposed in my article. Accordingly, the mission statement will be assumed to include only the essential tasks of the unit as a whole and not the purpose, e.g., the who, what, when, and where of the operation; not the why. This is to eliminate the redundancy between the assumed role of the commander's intent and FM 101-5's specified role of the mission statement. For a more detailed analysis of the commander's intent and its role in the operations order see Edward J. Filiberti, "The Army Standard Operations Order: Has It Kept Pace With the Changing Operational Environment", pp. 41-46.

### III. THE CONTENTS OF THE OPERATIONS ORDER:

1. Field Marshal Sir William Slim, Individual quote, Australian Army Journal, July 1958, p. 18.
2. FM 100-5, Operations, (May 1986), p. 2.
3. Ibid, pp.2-4.
4. Major John T. Nelson II, Where To Go From Here?: Considerations for the Formal Adoption of Auftragstaktik by the U.S. Army, Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, 5 December 1986, p. 15.
5. Major Stephen E. Runals, USA, "Command and Control: Does Current U.S. Army Tactical Doctrine Meet the Requirement for Today's High Intensity Battlefield?", Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: U.S. Army Command and General Staff College, 5 December 1986, p. 35.
6. FM 100-5, p. 6.
7. Ibid, p. 21.
8. Ibid

9. Ibid

10. Ibid

11. Ibid, pp. 34-35. The following guidance was extracted from the section on planning and conducting tactical operations.

12. Ibid, p. 35.

13. The amount of detail which should be included as standard or essential information is the central issue here. This analysis is being done to point out what appears to be an inconsistency with those elements prescribed in both FM 100-5 and FM 101-5, the expected operational environment and related command and control doctrine discussed in FM 100-5. Major Runals also points out that the tactical C2 doctrine in both FM 100-5 and FC 101-55 "present a disjointed, and in many places internally inconsistent, concept of the U.S. Army's approach for dealing with the fundamental elements of war." ,p.37.

14. FM 100-5, pp.21-22.

15. Major James H. Willbanks, USA, "AirLand Battle Tactical Command and Control: Reducing the Need to Communicate Electronically in Command and Control of Combat Operations at the Tactical Level", Thesis for the Command and General Staff College, Fort Leavenworth, KS, 1984.

16. V.F. Nieva, E.A. Fleishman, A. Reick, Team Dimensions: Their Identity, Their Measurement and Their relationships, Washington D.C.: Advanced Research Resources Organization, Nov. 1978, pp. 63-65. Dyer et al. also uses this model in their analysis of squad performance during their 1985 study of 54 squads. However, they limit their analysis to examining those portions of the operations order that address only the Nieva et al. functions of orientation and organization.

17. This is a key aspect of the model. Most group dynamics models do not focus on team performance but rather focus on individual performances within the group or only focus on specific roles and functions of individuals within the teams.

18. The Commander's Intent role and location are as indicated in Endnote # 13, Section II.

19. In written communications prior to the 1900's, before the advent of routine electronic or wire communications, it was not uncommon for commanders to include statements in their written orders sanctioning bad or complimenting good performance and exhorting subordinates to achieve even greater levels of performance.

will be compared. I define the commander's intent as "What the commander is trying to achieve and the critical aspects of how he hopes to achieve it." I also indicates that the superficial treatment of the "why" of the operation in the mission statement probably led to the emergence of the commander's intent paragraph. In examining the operations order format listed in FM 101-5, it specifies that the mission statement will include both the task (or tasks) to be accomplished and the purpose to be achieved. This is also supported by FM 101-5-1 where it defines the mission as including a concise statement of the who, what, when, where, and why of the operation. In actual practice, it appears that the commander's intent is assuming the role of providing the rationale for the operation which should be included under the mission statement. Although the commander's intent paragraph is not yet codified in our field manuals and thus not formally adopted as part of the orders format, this monograph will include it as an integral part of the format in its analysis. Its current location will be treated as paragraph 3a and its role will be as I proposed in my article. Accordingly, the mission statement will be assumed to include only the essential tasks of the unit as a whole and not the purpose, e.g., the who, what, when, and where of the operation; not the why. This is to eliminate the redundancy between the assumed role of the commander's intent and FM 101-5's specified role of the mission statement. For a more detailed analysis of the commander's intent and its role in the operations order see Edward J. Filiberti, "The Army Standard Operations Order: Has It Kept Pace With the Changing Operational Environment", pp. 41-46.

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7. Ibid, p. 21.
8. Ibid

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16. V.F. Nieva, E.A. Fleishman, A. Reick, Team Dimensions: Their Identity, Their Measurement and Their relationships, Washington D.C.: Advanced Research Resources Organization, Nov. 1978, pp. 63-65. Dyer et al. also uses this model in their analysis of squad performance during their 1985 study of 54 squads. However, they limit their analysis to examining those portions of the operations order that address only the Nieva et al. functions of orientation and organization.

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19. In written communications prior to the 1900's, before the advent of routine electronic or wire communications, it was not uncommon for commanders to include statements in their written orders sanctioning bad or complimenting good performance and exhorting subordinates to achieve even greater levels of performance.

20. Martin van Creveld, Command in War, Cambridge, Mass: Harvard University Press, 1985, pp. 1-4. van Creveld lists five factors that have influenced the development of C3: (a) the increased demands made on command systems by present-day warfare; (b) technological developments that have multiplied the means at the disposal of command systems; (c) changes in the nature of the command process, resulting from the interaction of factors (a) and (b); (d) the appearance of new weapon systems that, when coupled with structural changes inside command systems themselves, have increased the vulnerability of command systems; and (e) the rise of costs, caused by factors (a) through (d).

21. Ibid, Chapters 2-7, van Creveld describes six periods that have been distinct in the resultant command, control and communications system which emerged as being a key factor in the conduct of war. The first period includes the "antedeiluvian" age before 1800 where the the means of communication changed little over the course of several centuries. The second period stretched from 1800 through around 1866 and represents an account of the Napoleonic period which witnessed a revolution in the art of command through strategic and operational employment of forces rather than through any technological advances. The third period covers the advances in C3 wrought by the formation of the German General Staff together with the the advent of the telegraph as an improved means of exercising control over extended distances and the railroad as a means of moving large bodies of men and material according to specific time schedules. This period includes 1866 through the beginning of the first world war and also represents a period of time during which many technological advances in weaponry were brought about. The fourth period covers the time between the beginning and end of the first world war. This was a period where the lethality of new weapons could overcome the mass of combat power that could feasibly be controlled and concentrated using the available command and control equipment and systems. Thus, in the absence of overwhelming numerical superiority on either side and with the absence of a communication network to effectively control operations, the outcome was a stalemate. The final period included what van Creveld terms "mobile warfare". This period involved the advent of massed armor formations which had wireless communication and the decentralized execution of operations by highly mobile and lethal units and extends into the modern employment of the helicopter and computer as factors in command, control and communication.

22. LTC John U. Ayotte, "Combat Orders", Infantry Journal, Nov. 1941, pp. 2-3. Chamberlain's article, p. 29, also uses the charge at Balaclava as an example of faulty orders.

23. H.B. Chamberlain, "On the Issue of Orders", Australian Army Journal, no. 127, December 1959, p.30.

24. The study of different orders issued to different subordinate commanders at the same time by the same commander is interesting and informative. The orders issued by General Robert E. Lee during the battle of Chancellorsville are excellent

examples of orders tailored to the receivers. To Stonewall Jackson, Lee sent a suggestion which resulted in Jackson's attack against the enemy's exposed flank; to another subordinate he gave explicit and detailed instructions which resulted in the stabilization of an over-extended flank; to another he presented two alternatives which allowed the subordinate to choose the most appropriate based upon future circumstances. Unfortunately Lee also made a judgement error at Gettysburg when he misinterpreted the character and temperament of General Ewell. He sent Ewell the order to capture Cemetery Hill "if possible". Ewell had become accustomed to very specific and detailed orders from his previous commander, General Jackson. To Jackson, Lee's order would have meant to commit all available forces to seize Cemetery Hill. To Ewell "if possible" meant don't bother. Pendleton, p. 132.

25. C.H. Corlett, "Evolution of field orders", Coast artillery journal, June 1925, pp. 502-513.

26. Corlett points to the orders issued by General Shafter during the Spanish-American War as an example of regression. General Shafter issued a deployment order governing the disembarkation of the American Army. However, "although over 15,000 troops were engaged in the battles of San Juan and El Caney, no written, and but a few verbal orders, were issued by any commander". p. 513.

27. *Ibid*, p. 503.

28. Infantry School Quarterly, "Operation orders", July 1949, p. 78.

29. Corlett, p. 513.

30. Major Eben Swift, Field Orders, Messages and Reports, Washington: Government Printing Office, July 10, 1906, p. 17.

31. Review of Military Literature, "Field Orders," vol. 56, Mar 1935, (issued at C&GSS as memo of 1 Sep 1935), p. 62.

32. *Ibid*, p. 55. Typical of this improvement were the orders published by the 1st Division. From the 2d of October to the 5th of November, 1918, the 1st Division participated in one relief, eight marches, and six attacks. Each of the 15 orders issued were progressively shorter and more precise. The order for the attack issued on 2 October contains about 1500 words, the order for the attack on the 6th of November contains about 425 words. The volume of the order was reduced by two thirds. The major information which was left out concerned primarily the coordinating instructions for the various arms and branches. After a month of intense combat, these activities had become automatic (paraphrased from above article, p. 55).

33. Capt. James T. Root and Capt Bickford E. Sawyer, "The New Operation Order", Infantry School Quarterly, July 1954, pp. 28-37.

34. The format in ST 100-3 specifies sub-subparagraphs under subparagraph 3b, Concept of operation. These sub-subparagraphs address the role that selected elements of combat power make to the overall scheme of maneuver and are not intended to replace the "Tasks to Combat Support Units" subparagraphs addressing these same elements of combat power. The purpose of these new sub-subparagraphs are to give the entire command the concept of how these elements of combat power will be used and synchronized to aid the overall mission. Finally, ST 100-3 further delineates subparagraphs under paragraph 3, Execution. These subparagraphs consolidate the tasks to subordinate units into two categories: Paragraph 3c, Tasks to Maneuver Units, and Paragraph 3d, Tasks to Combat Support Units. These subparagraphs are in turn broken down into sub-subparagraphs addressing specific units and then sub-sub-subparagraphs and in some instances sub-sub-sub-subparagraphs which address the minimum essential information that should be given each respective unit.

35. A recent study of 70 operations orders (8 division, 32 brigade and 30 battalion) actually issued in training exercises by tactical units, determined that the orders were "frought with excessive guidance which was either standard operating procedure or could have been implied in the units basic mission... This redundancy was exacerbated, in some instances, by the inclusion of information under a functional area (fires, engineers, electronic warfare, etc.) and then also under the unit instructions, e.g., artillery battalion, engineer battalion, MI battalion, etc. Consequently, the quality of information and guidance was low, while the quantity of information was high" (Filiberti, "The Army Standard Operations Order: Has It Kept Pace With the Changing Operational Environment", p. 55.). Further in the study this is reinforced by subject matter experts. In a survey of 115 CGSC tactics instructors and CGSC students who were former battalion and brigade S-3s, the study determined that 78% of those surveyed believed that current operations orders included information which should be standard operating procedure and that this deficiency had at least some negative impact on the effectiveness of the order. 61% and 69% believed that excessive redundancy and excessive detail, respectively, had at least some negative influence on order effectiveness. (Filiberti, pp. 64-65.)

36. Colonel Henry E. Kelly (Ret) proposed in the FORUM section of Infantry magazine that the operations order should be modified. He indicated that during his combat tours in Vietnam, the current (5) paragraph operations order was seldom used. He proposed a three paragraph operations order format that begins with a paragraph which contains both the mission and concept of operation. Paragraph 2 would contain information concerning the enemy, support available, terrain and command and communications details. Finally, paragraph 3 would include essential supply and evacuation details. The combining of our current paragraphs 2 and 3 into paragraph 1, closely approximates the pre-1954 format paragraph 2. According to Col Kelly, this format was in common use during the Vietnam War. H.E. Kelly, "Operation Order", Infantry, v. 59, no. 3, May-June 1969, p. 31.

37. The concept of operations has grown in both size and specificity. CGSC is currently requiring that students compose paragraph 3 to include not only the scheme of maneuver and scheme of fires but also the contribution of selected elements of power (counterair, intelligence, electronic warfare, engineering, etc.) to the overall scheme of maneuver. In addition, students are required to address the five elements of the battlefield framework (deep operations, security, close operations, rear operations, and use of the reserve) in the scheme of maneuver. All these elements combined in one paragraph, together with the description of the concept of synchronization and designation of the main effort, result in a paragraph 3 that is voluminous and overly specific. The orders format attempts to gain clarity through the union of the majority of guidance in one cohesive narrative of the envisioned operation. Consequently the emphasis is on coordination, synchronization and control rather than on co-action and independent operations within some minimum constraints imposed by the commander. This contrasts significantly with the pre-1954 format which, through its information elements, minimizes the guidance pertaining to control and synchronization and tends towards independent actions taken by subordinate commanders with allocated resources to achieve assigned objectives.

#### IV. CRITICAL ANALYSIS OF THE CURRENT FORMAT:

1. J.F.C. Fuller, Armoured Warfare, London: Eyre and Spottiswoode, 1943, pp. 158-159.

2. At the lower tactical level, the connection between effect and task is more direct than at higher levels. There is usually limited freedom to select alternative tasks to accomplish the effect let alone choose alternative effects to achieve the higher's effect. This is not so at higher tactical, operational and strategic levels. At these levels, effective operations require consideration of alternative effects and objectives. The intent is to surprise the enemy with not only how you attack, but also what you attack and how what you attack influences his combat power. Part of the art of war entails identifying effects that are unforeseen by the enemy. Associated with the effects are objectives which significantly contribute to the combat power of the enemy and are vulnerable. Objectives achieve effects because of both their contribution to the enemy's combat power and their vulnerability to attack. Generally, those objectives which have an obvious contribution (impact) on the enemy's combat power are also the objectives which are least vulnerable because the enemy has taken steps to protect them. Thus, the greater the obscurity of the objective's contribution, usually the greater is its vulnerability. However, there is also a greater degree of uncertainty that its destruction or capture will achieve the desired effect, e.g., its accomplishment will cause the enemy to respond as desired. However, by following what Liddell Hart terms "the line of least resistance" or "least expectation" you increase your chances of succeeding at minimum cost to your forces. In this way, the problem of devising operational plans

becomes one of examining effects, objectives, vulnerabilities and uncertainty.

3. The real pitfall in planning and execution comes in the initial formulation of the plan by the commander. It is here that the commander can violate the spirit of AirLand Battle doctrine by developing plans which require detailed control measures and complex schemes of synchronization based upon postulated enemy actions. The envisioned plan should be as simple as possible and allow the maximum degree of flexibility. The extreme would be the dividing up of available resources, the assignment of objectives, the designation of the main effort, and the establishment of an LD time. A slightly more complex scheme would entail the synchronization or control of two or more combat or combat support elements at one time during the operation. The other end of the spectrum would have a concept which relied upon continuous control and multiple synchronized events using the majority of available combat power.

4. A recent study indicated that contingency planning was not being reflected in current operations orders. Of the 70 operations orders examined in the study only 9 had made any provisions for variations to the basic plan and these were very sketchy be-prepared and on-order missions (Filiberti, "The Army Standard Operations Order: Has It Kept Pace With the Changing Operational Environment", p. 53.).

5. 73% of a recent sample of 115 subject matter experts indicated that the chaotic battlefield of the next war would require broad guidance instead of detailed plans requiring tight control (Ibid, p.65).

#### APPENDIX A, BACKGROUND AND LITERATURE REVIEW:

1. Chamberlain, p. 32.

2. James H. Morris and Robert A. Snyder, "Organizational Communication and Performance", Journal of Applied Psychology, vol 69, no. 3, Aug 1984, pp. 461-465.

3. Nieva et al, p.22.

4. Ibid, p. 21. Nieva et al. list two sources: P. Federman and A. Siegel, Communications as a measurable index of team behavior, Technical Report NAVTRADEVCCEN 1537-1, Orlando, Florida: Naval Training Device Center, October, 1965 and W.A. Johnson, "Transfer of team skills as a function of type of training", Journal of Applied Psychology, 1966, vol. 50, pp. 102-108.

5. Dyer et al., p. 2 identifies and describes the report conducted by J. G. McKay, S. Gianci, C.E. Hall, and J.E. Taylor, Some factors which have contributed to both successful and unsuccessful American infantry small unit actions, Hum RRÜ Research Memorandum No. 13, Ft. Benning, GA.: U.S. Army Infantry Human Research Unit, April 1959. This study was obtained and the Dyer et al. assessments confirmed.

6. Ibid, p. 3. Dyer et al also list the T.D. Scott, L.L. Meliza, G.D. Hardy and J.H. Banks, Armor/anti-armor team tactical performance, ARI Research Report 1218, Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, July 1979 and K. F. Henriksen, D.R. Jones, D.L. Hannaman, P.B. Wylie, E.L. Shriver, B.W. Hamill, and R.H. Sulzen, Identification of combat leaders skills and leader-group interaction processes. ARI Technical Report 440, Alexandria, VA. : U.S Army Research Institute for the Behavioral and Social Sciences, Jan 1980. These studies were also obtained and evaluated.

7. Henriksen et al., pp. 26-54.

8. Ibid, p.30.

#### APPENDIX B, PROPOSED DEFINITION OF COMMAND AND CONTROL:

1. K. H. Boettger, "Types of strategic and operational papers in military history", Snowy Owl, v2, no. 3, 1963-65, p. 31. This article gives both the German and English quote from Goethe.

2. Runals, Appendix C. In Appendix C, Major Runals lists six separate definitions of C2 in current military publications. Additionally he provides his own synthesis of the definitions on page 4 of his monograph. All definitions quoted and the one proposed by Runals are substantially different than this study's proposed definition.

3. Frederick W. Timmerman Jr., LTC USA, "Of Command and Control and Other Things", Army Magazine. May 1985, pp. 55-58.

#### APPENDIX C, COMMAND AND CONTROL THEORY

1. Carl von Clausewitz, On War, edited and translated by M. Howard and P. Paret, Princeton, N.J.: Princeton University Press, 1976, p. 141.

2. Ibid, p.136.

3. Ibid, p. 137.

4. These are the leadership imperatives plus one. The additional leadership imperative of continuity is proposed by Colonel Huba Wass de Czege, one of the principal authors of FM 100-5. This imperative, among other things, focuses on the activities of the leader to maintain positive interpersonal relationships between his subordinate commanders within his unit. It also encompasses providing stability in philosophy and activities within the unit. Additionally, it connects the activities normally associated with management practices of personnel stability, e.g., rotation, attrition and replacement, with the moral domain of war that includes such concepts as cohesion, esprit, pride, and consistency.

5. Clausewitz, pp. 136-140.

APPENDIX D, OVERVIEW OF HISTORICAL EVOLUTION OF THE OPORD FORMAT

1. Timothy K. Nenninger, The Leavenworth Schools and the old Army, Westport, Connecticut: Greenwood Press, 1978, pp. 43-50.
2. War Department, Field Service Regulations United States Army, 1905 with amendments to 1908, Washington: Government Printing Office, 1 Feb 1905, p 30.
3. Swift, pp. 17-28.
4. War Department, Field Service Regulations United States Army, 1910, Washington: Government Printing Office, 21 Feb. 1910, pp. 61-64.
5. War Department, Field Service Regulations United States Army, 1913 with corrections to May 21, 1913, Washington: Government Printing Office, 21 May 1913, pp. 75-93.
6. War Department, Field Service Regulations United States Army, 1914 corrected to July 31, 1918, Washington: Government Printing Office, 19 Mar 1914, pp. 43-47.
7. War Department, Field Service Regulations United States Army, 1923, Washington: Government Printing Office, 2 Nov 1923, pp. 6-10.
8. War Department, Staff Officers' Field Manual, Part One, Staff Data, Washington: Government Printing Office, 26 Sep 1932, pp. 29-33.
9. War Department, FM 101-5, Staff Officers' Field Manual, The Staff and Combat Orders, with changes 1-10, Washington D.C.: Government Printing Office, 19 Aug 1940, pp. 41-47.
10. Department of the Army, FM 101-5, Staff Officers' Field Manual, Staff Organization and Procedure, with change 1, Washington D.C.: Government Printing Office, 13 July 1950, pp. 76-83.
11. Department of the Army, FM 101-5, Staff Officers' Field Manual, Staff Organization and Procedure, with change 1, Washington D.C.: Government Printing Office, 29 April 1955, pp. 114-123.
12. Department of the Army, FM 101-5, Staff Officers' Field Manual, Staff Organization and Procedure, with change 1, Washington D.C.: Government Printing Office, 19 July 1960, pp. 269-273.

13. Department of the Army, FM 101-5, Staff Officers' Field Manual, Staff Organization and Procedure, Washington D.C.: Government Printing Office, 14 June 1968, pp. F1-F7.

14. Department of the Army, FM 101-5, Staff Officers' Field Manual, Staff Organization and Procedure, Washington D.C.: Government Printing Office, 19 July 1972, pp. F3-F8.

15. Department of the Army, FM 101-5, Staff Organization and Operations, Washington D.C.: Government Printing Office, 25 May 1984, pp. G12-G18.

16. ST 100-3, pp. 8-4 - 8-22.

## BIBLIOGRAPHY

- Allen, J.F. and Litman, D.J. Plans, Goals, and Language. Proceeding of the IEEE. 74: 939-47, July '86.
- Anstey, E.C. The intention paragraph of operations orders. Fighting Forces. 601-604, Feb 1936.
- Ayotte, John U. Combat Orders. Infantry Journal. 2-9, November 1941.
- Barnaby, Frank, ed. Future War, Armed Conflict in the Next Decade. New York: Facts on File Publications, 1984.
- Birrer, Ivan J. Letter of instructions. Military Review. v45, no. 8: 59-61, August 1965.
- Boettger, K.H. Types of strategic and operational papers in military history. Snowy Owl. v2, no.3: 29-31, 1963-65.
- Bonham, Francis G.. Analysis of Army Orders and Annexes. Lecture delivered at the Army War College. Ft. Humphreys, DC, September 8, 1936.
- Broad, W.J. Military Grapples With Chaos Factor. Science. 213: 1228-1229. September 11, 1981.
- Burke, J.T. The Next Step: Managing Battle With Technology, Illus. Army. 36: 56-60, Mar 86.
- Carrington, J.H. Command Control Compromise, Values and Objectives for the Military Manager. Annapolis, MD: Naval Institute Press, 1973.
- Chamberlain, H.B. On the issue of orders. Australian Army Journal. no. 127: 29-32, Dec 1959.
- Chester, A.M. and Murray, J.E. Orders and Directives; A Manual for Commanders, Staff Officers and NCOs. Washington, DC: Combat Forces Press, 1953.
- C&GSS Quarterly. Combat orders (Tentative Change No. 1). vol 64: 44-73, March 1937.
- Clarke, B.C. Leadership, Commandership, Planning and Success. Army Logistician. 17: 2-6, Sep-Oct '85.
- Corlett, C.H. Evolution of field orders. Coast artillery journal. 502-513, June 1925.
- Crevelde, van Martin. Command. Cambridge, Mass: Harvard University Press, 1985.
- Davies, W.J.K. German Army Handbook 1939-1945. New York: Arco Publishing Company, Inc., 1974.

- Deese, James. The Psychology of Learning. New York: McGraw-Hill Book Company, 1952.
- Dewey, John. Context and Thought. Berkeley, California: University of California Press, 22 August 1931.
- Drucker, P.F. The Effective Executive. New York: Harper & Row Publishers, 1985.
- Dyer, J.L., Bennett, R.H., and Sulzen, R.H. Infantry Rifle Squad Operation Orders - Their Characteristics and Role in Mission Success. (ARI Research Note 85-4). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, Jan. 1985.
- Estes, W.K. (ed) Cognition and social Behavior. Hillsdale, N.J.: Lawrence Erlbaum Associates, Publishers, 1980
- Everett, R.R. Yesterday, Today and Tomorrow in Command, Control and Communication. Technology Review. 85: 66-68, January '82.
- Federal Republic of Germany, the Army. The German Army's Mission-Oriented Command and Control. Armor. 90: 12-16, Jan-Feb 81.
- Federman, P. and Siegel, A. Communications as a measurable index of team behavior. Technical Report NAVTRADEVCEEN 1537-1, Orlando, Florida: Naval Training Device Center, October 1965.
- Filiberti, Edward J. The Army Standard Operations Order: Has It Kept Pace With the Changing Operational Environment. MSA 685 Integrative Project, Central Michigan University Graduate School, Mount Pleasant, Michigan: Central Michigan University, 20 June 1987.
- \_\_\_\_\_. Command, Control and the Commander's Intent. Military Review. 54-59, August 1987.
- Fuller, J.F.C.. Armoured Warfare. London, Great Britain: Eyre Spottiswoode LTD., November, 1943.
- Gallenkamp, Curt, General der Artillerie. Examples Taken from War as an Empirical Basis for the Arrangement of Map Exercises and Field Exercises. Trans. US Army. Report prepared for the Historical Division, European Command, 1951. Doc No. MS C-079.
- Hart, B.H. Liddell. Strategy. New York: The New American Library, September, 1974.
- Hayes, J.R., Waterman, D.A. and Robinson, C.A. Identifying relevant aspects of a problem text. Cognitive Science. 297-313, 1977
- Heilmeier, G.H. The Influence of Technology on Warfare in the 21st Century. Marine Corps Gazette. 69: 30-36, Nov. '85.

Henriksen, K.F., Jones, D.R., Hannaman, D.L., Wylie, P.B., Shriver, E.L., Hamill, B.W., & Sulzen, R.H. Identification of Combat Unit Leader Skills and Leader-group Interaction Processes (ARI Technical Report 440). Alexandria, VA.: U.S. Army Research Institute for the Behavioral and Social Sciences. Jan 1980. (DTIC NO AD A084 977)

Howard, Michael, et al. Carl von Clausewitz On War. Translated by M. Howard and Peter Paret. Princeton, N.J.: Princeton University Press, 1976.

Infantry School Quarterly. Operation Orders. 78-89, July 1949.

Johnson, W.A. Transfer of team skills as a function of type of training. Journal of Applied Psychology. v. 50: 102-108. 1966.

Just, M.A. & Carpenter, P.A. (Eds.) Cognitive processes in comprehension. Hillsdale, N.J.: Lawrence Erlbaum, 1977, p.238.

Kelly, H.E. Forum: Operation Orders. Infantry. v.59, no.3: 31, May-June 1969.

Kiesling, Hans von. Operations Orders. A Technical Study. London: His Majesty's Stationery Office, 1910.

Kratman, T.P. Philosophy, Technology, and Tactics. Infantry. 75: 18-20, Sep-Oct '85.

Lossow, Walter von, Oberstleutnant, Army of the Federal Republic of Germany. Mission-Type Tactics Versus Order-Type Tactics. Military Review. 57: 87-91, June 1977.

Luttwak, Edward N. and Horowitz, Daniel. The Israeli Army. Cambridge, MA: Abt Books, 1983.

Marshall, S.L.A. Men Against fire: The Problem of Battle Command in Future War. Washington DC: Infantry Journal, 1947; reprint ed., Gloucester, Mass.: Peter Smith, 1978.

McKay, J.G., Gianci, S., Hall, C.E., & Taylor, J.E. Some Factors Which Have Contributed to Both Successful and Unsuccessful American Infantry Small Unit Actions (Hum RRO Research Memorandum No. 13). Ft. Benning, GA.: U.S. Army Infantry Human Research Unit, April 1959. (DTIC NO AD 260 994)

McMahon, Timothy L., The Key to Success: Developing a C2 Philosophy. Military Review. 65: 42-44, November 1985.

Miettinen, J.K. The Effect of New Military Technology on Future Battlefield Tactics and the Structure of Armed Forces in The Dangers of New Weapon Systems. Gutteridge, W. and Taylor, W. eds. New York: St. Martin's Press, 1983.

- Morris, J.H., Snyder, R.A. Organizational Communication and Performance. Journal of Applied Psychology. vol. 69, No. 3: 461-465, Aug 84.
- Nelson, J.T. II. Where To Go From Here?: Considerations for the Formal Adoption of Auftragstaktik by the US Army. Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, 5 December 1985.
- Neisser, Ulric. Cognitive Psychology. New York: Appleton-Century-Crofts, Inc, 1967
- Newell, C.R. Modern Warfare: Balancing the Ends, Ways and Means. Army. 36: 24-28, Aug '86.
- Nieva, V.F., Fleishman, E.A. & Reick, A. Team Dimensions: Their Identity, Their Measurement and Their Relationships. Washington, D.C.: Advanced Research Resources Organization, Nov. 1978.
- Nenninger, Timothy K. The Leavenworth Schools and the old Army. Westport, Connecticut: Greenwood Press, 1978.
- Pendleton, Alan. On Combat Orders. Infantry Journal. 131-139, Mar-April 1936.
- Posen, B. R. The Sources of Military Doctrine. Ithaca, New York: Cornell University Press, 1986.
- Review of Military Literature. Field Orders. v. 56: 60-75, Mar 1935 (Issued at C&GSS as memo of 1 Sep 1935).
- Rendulic, Lothar, Generaloberst Dr. Combat Orders. Trans. US Army. Report prepared for the Historical Division; US Army, Europe; 1947. Doc No. D-268.
- Rogers, J.B. Synchronizing the AirLand Battle. Military Review. 66: 65-71, Apr '86.
- Root, James T. The new operations order. Infantry School Quarterly. 28-37, July 1954.
- Runals, Stephen E. Command and Control: Does Current US Army Tactical Command and Control Doctrine Meet the Requirements for Today's High Intensity Battlefield? Monograph, School of Advanced Military Studies. Ft. Leavenworth, KS.: US Army Command and General Staff College, 2 December 1985.
- Scott, T.D., Meliza, L.L., Hardy G.D. & Banks, J.H. Armor/Anti-armor Team Tactical Performance (ARI Research Report 1218). Alexandria, VA.: U.S. Army Research Institute for the Behavioral and Social Sciences, July 1979.
- Schmidt, Robert L. A Doctrine for Command. Military Review. 65: 45-47, November 1985.

- Schramm, Wilbur, ed.. The Science of Human Communication. New York: Basic Books, Inc., 1963.
- Slim, William. Individual quote in Australian Army Journal. 18: July 1958.
- Steinbruner, J.D.. The Cybernetic Theory of Decision. Princeton, New Jersey: Princeton University Press, 1974.
- Strachan, Hew. European Armies and the Conduct of War. Winchester, Mass: Allen & Unwin, Inc, 1984.
- Swift, Eben. Field Orders, Messages and Reports. Washington: Government Printing Office, July 10, 1906.
- Timmerman, F.W. Synchronizing the force: A base unit approach. Military Review. 65: 50-59, Mar '85.
- \_\_\_\_\_. Of Command and Control and Other Things. Army Magazine. 55-58, May 1985.
- U.S. Army Command and General Staff College. Student Text (ST) 22-2, Effective Staff Communications. Fort Leavenworth, KS, June 1986.
- U.S. Army Command and General Staff College. Student Text No. 100-3 (Battle Book). Fort Leavenworth, KS, 1 Apr 1986.
- U.S. Army Command and General Staff College. Student Text No. 100-9 (The Command Estimate). Fort Leavenworth, KS, 1 July 1986.
- U.S. Department of the Army. FM 100-5, Operations. Washington, DC: US Government Printing Office, 5 May, 1986.
- U.S. Department of the Army. FM 101-5, Staff Officers' Field Manual, Staff Organization and Procedure, with change 1. Washington D.C.: Government Printing Office, 13 July 1950.
- U.S. Department of the Army. FM 101-5, Staff Officers' Field Manual, Staff Organization and Procedure, with change 1. Washington D.C.: Government Printing Office, 29 April 1955.
- U.S. Department of the Army. FM 101-5, Staff Officers' Field Manual, Staff Organization and Procedure, with change 1. Washington D.C.: Government Printing Office, 19 July 1960.
- U.S. Department of the Army. FM 101-5, Staff Officers' Field Manual, Staff Organization and Procedure. Washington D.C.: Government Printing Office, 14 June 1968.
- U.S. Department of the Army. FM 101-5, Staff Officers' Field Manual, Staff Organization and Procedure. Washington D.C.: Government Printing Office, 19 July 1972.

- U.S. Department of the Army. FM 101-5, Staff Organization and Operations. Washington D.C.: Government Printing Office, 25 May 1984.
- U.S. Department of the Army. FM 101-5-1, Operational Terms and Symbols. Washington, DC: US Government Printing Office, 21 October, 1985.
- U.S. War Department. Field Service Regulations United States Army, 1905 with amendments to 1908. Washington: Government Printing Office, 1 Feb 1905.
- U.S. War Department. Field Service Regulations United States Army, 1910. Washington: Government Printing Office, 21 Feb. 1910.
- U.S. War Department. Field Service Regulations United States Army, 1913 with corrections to May 21, 1913. Washington: Government Printing Office, 21 May 1913.
- U.S. War Department. Field Service Regulations United States Army, 1914 corrected to July 31, 1918. Washington: Government Printing Office, 19 Mar 1914.
- U.S. War Department. Field Service Regulations United States Army, 1923. Washington: Government Printing Office, 2 Nov 1923.
- U.S. War Department. Staff Officers' Field Manual, Part One, Staff Data. Washington: Government Printing Office, 26 Sep 1932.
- U.S. War Department. FM 101-5, Staff Officers' Field Manual, The Staff and Combat Orders, with changes 1-10. Washington D.C.: Government Printing Office, 19 Aug 1940.
- Vermillion, John M. Tactical Implications of the Adoption of Auftragstaktik for Command Control on the AirLand Battlefield. Monograph, School of Advanced Military Studies. Ft. Leavenworth, KS.: US Army Command and General Staff College, 2 December 1985.
- Wallsten, Thomas S. ed. Cognitive Processes in Choice and Decision Behavior. Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1980.
- Willbanks, J. H.. Airland Battle Tactical Command and Control: Reducing the Need to Communicate Electronically in Command and Control of Combat Operations at the Tactical Level. Thesis for the Command and General Staff College, Fort Leavenworth, KS, 1984.
- Williamson, J.E. Command and Control. Infantry. 76: 25-29. May-Jun '86.

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